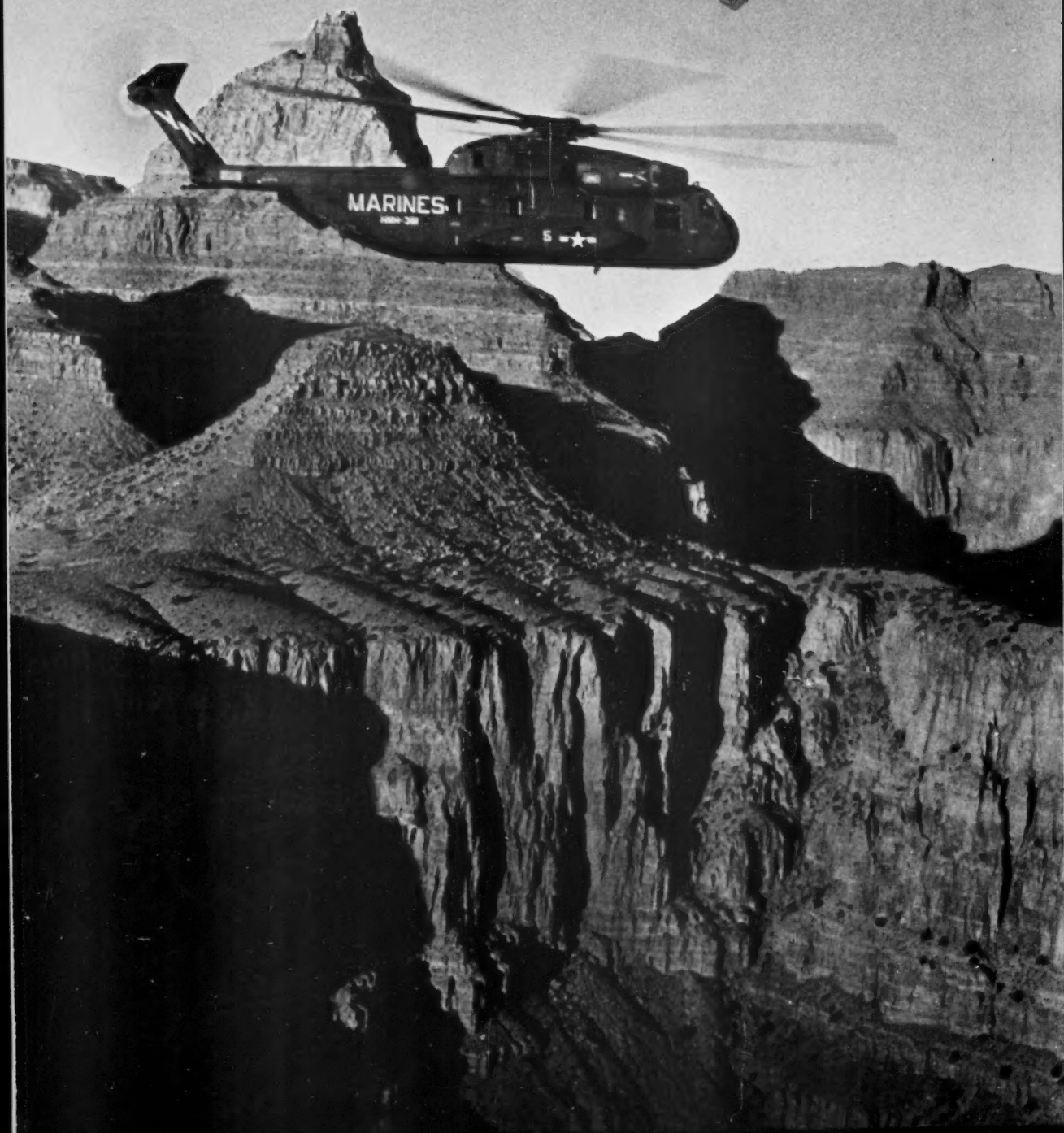


approach

NOVEMBER 1979 THE NAVAL AVIATION SAFETY REVIEW



Mid-Cruise Blues

By Deen Poe
VA-65



"IT'S been a good cruise so far. Not quite as much flight time as we would like, but we can't really complain. We haven't lost any aircraft, and the only real accident we had was the JBD hitting the E-2 prop. We were lucky on that one to have no serious injuries. Just one more week until the mid-cruise dependents' charter. I can't wait to see my wife again."

"Oops, I just missed what he said about the divert field. I should be paying more attention to the brief. Same old stuff, never seems to change, except the names of the divert fields. I love these night SSSC hops. I think tonight I'll fly at 1000 feet instead of the 3000 feet in SOP. Should be able to get better identification on the contacts. After I get back tonight, I better make a list of things to do when I get into port. I'll write some things down during the hop. Uh-oh, I missed what 'Old Ether Breath' said about hot areas. Well, no biggie, I'll be under E-2 control. Time to get dressed; I probably missed half the brief, but I can fake it."

The "Mid-cruise Blues" — a common affliction on all bird farms. Without discrimination, it affects everyone from the flightcrews to the duty oiler. Along with it come daydreams, absentmindedness, and complacency. Don't get me wrong, complacency can pay off — like SGLI, Death Gratuity, VA Benefits for mama and the kids.

There is no "appropriate" time to stress safety; it's a continuous battle. There are, however, times which become safety critical. Approaching mid-cruise standdown, the carrier and air wing enter this critical area. This is not necessarily a time for a safety standdown, but it is certainly a time for all COs, ops officers, and safety officers to become overly concerned with SOP, NATOPS, CV procedures, and, above all, attitude. They should monitor briefs and stress items to cover. It's also a time for maintenance officers to check and recheck maintenance procedures and the proper use of MIMs and MRC decks. Quality Assurance should become a little more critical of the collateral duty inspectors; ensure that the flightcrews and troubleshooters understand and adhere to the command's day and night go/no-go criteria. Everyone should take a close look at all flight gear and flight deck gear, review applicable emergency procedures, go over the procedures used during the movement of aircraft, and talk with the flight deck personnel in an effort to correct any problems. Flight leaders, take a close look at yourself. If the "mid-cruise blues" are affecting you, then you can anticipate that they are having a similar effect on your B/N, RIO, or wingman. Make an effort to change the routine of the flights and make each flight challenging.

Anticipation, preplanning, and a solid safety program that has command interest and backing should help you avoid canceling reservations on the mid-cruise charter flight because of a lost shipmate. ◀

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*This month's
cover photograph
of a CH-53
Sea Stallion was
submitted by LT
Michael G.
Thomas.*

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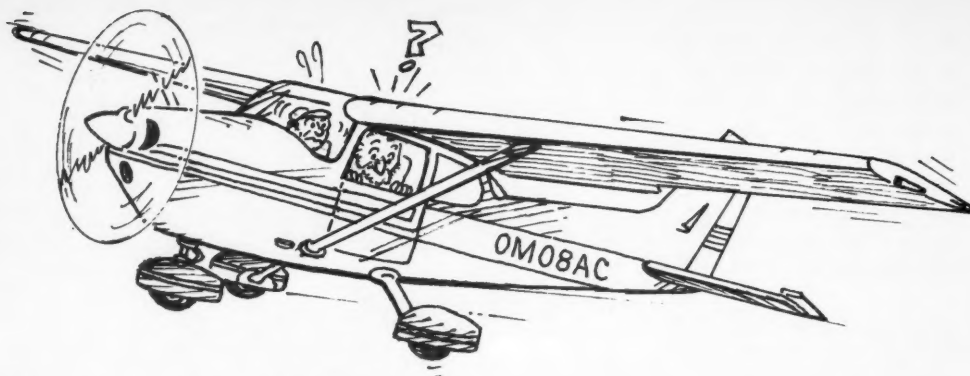
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A FUNNY THING HAPPENED AT THE FLYING CLUB!





By J. T. Toade

NOT very long ago, an old friend, whom I shall call *Ol' Fuzzy*, and I were talking about an article in *APPROACH* entitled — "Is NATOPS Needed for USN/USMC Flying Clubs?" (MAR '79 *APPROACH*). Several pros and cons were passed about; some were agreed upon, some were not. Then the conversation turned to pilots' qualifications, currency, and proficiency (both military and nonmilitary). As this subject could take eons to discuss, we decided to restrict our conversation to nonmilitary. In particular, flying club members.

I mentioned to him that I was interested in joining the local flying club, but that I'd like to take a "spin" around the flagpole someday, just to get my "feet off the ground" again. I had to see if I still had the magic touch of "stick and throttle, needle-ball, and airspeed." It had been several years since I left the active duty flying club, but not nearly as long ago as *Ol' Fuzzy*! I figured that I could hack the likes of a Cessna 150 or 172 after wrestling the likes of A-4s, F-9s, and C-117s for more than 20 years.

Anyway, *Ol' Fuzz* was a member of the club, and surely he must have to maintain some level of proficiency. Right? He had been flying for some 35 years, so between the two of us "old pilots," we decided to be "bold pilots" and take that spin. We decided that next week (good wx predicted) would be an ideal time, for if it weren't by then, *Ol' Fuzz's* currency, let alone proficiency, would expire (local club regs)! As we departed, I asked, "How much time does it take to remain proficient, *Fuzz*?" "One hour every 90 days," was his casual, yet skeptic reply. "See you next Wednesday" was the mutual parting gesture.

Fuzzy called on Monday and told me that he had reserved one of the aeroclub's Cessna 172s for Wednesday. We would be flying a round robin to historic Burgsville, some 100 miles to the northwest, midway between Tobaccoland and Peanut City. The flight should take about 2 hours. We would depart Central Muni, follow one of the estuaries of famous Grease Bay (to our place of intended landing for lunch), then back to Central Muni.

I asked him if there was anything that I could do in preparing for the flight. "No, not really," he replied, "unless

you can come up with some recent nav pubs of the general area." I said that I may be able to contact some of my "not-so-old" buddies that may have access to current pubs (*a little trick of cumshaw learned from being with the master artists for years*). With that we agreed to meet at the clubhouse between 0930-0945 hours. (*Oops, that's 9:30-9:45 a.m. in our present status of retirees or retreads, as the actives so affectionally call us.*)

Wednesday came, and I arrived at the prescribed time. My initial search for *Ol' Fuzzy* proved a bit futile, so I asked an aviatrix of some vintage if she knew *Fuzz*. "Not really, sir, I just work here," she replied with a friendly grin, and asked, "What's he look like?" "Tall, mid-fiftyish, a bit burly, and sporting a rather distinguished silver-gray beard, *a la* Hemingway," I described this dashing, athletic, former helo driver of the world's finest service. Someone, casually milling around the clubhouse, piped up and said, "He's in the back trailer filing a flight plan!"

Guessing where *that* may be, I started aft through a maze of doorways, windows, and walls that were adorned with cartoon characters, notes to members, various rules and regs (of various dates), and an occasional safety poster. After several misguided turns (into the head and the manager's office), I stumbled upon *Fuzz*, who was on the horn to the local FSS (Flight Service Station) trying to file a VFR one-way flight plan to Burgsville.

Now, I say "trying" because the ensuing two-way conversation between FSS and *Fuzz* was rather confusing to both — it definitely was to me. *Fuzz* did have things all preplanned, complete with kneeboard card. However, the confusion was mainly due to the checkpoints that *Fuzz* was trying to give to FSS. They no longer existed! It was no wonder — the charts that *Fuzz* was using for flight planning purposes were 5 years old! I got his attention and slipped him the '79 edition of the pubs that I cumshawed earlier. The redness of his face showed through his perfectly manicured beard.

The checkpoint problem now cleared up, *Fuzz* went on with the flight plan to Burgsville. He originally had it filed

as a one-way flight. He'd planned to refile from there back to Central Muni. Just about the time that things were all set between Fuzz and the FSS agent, Fuzz asked if it would be OK if he filed a roundrobin. (*I tried to tell him that what he wanted was a stopover flight plan.*) Well, this created some new problems for awhile, but it was finally decided that he wanted a roundrobin.

As this new plan was about to be finalized, Ol' Fuzzy decided to go with the original one-way, and refile prior to the return leg! He looked at me with that quizzical search for approval, to which I responded with a "thumbs-up" gesture of agreement. I then shook my head, a little bit confused, and turned around, only to come face-to-face with a cute little girl of preteenage years, who was about to go flying with her dad. Her comment really caught me by surprise. "Sir, do you guys really know where you're going, let alone how you're going to get there?" I grinned as she took her blanket and teddy bear to her airplane. It was obvious that she knew where she was going and how she was to get there! I figured with all our years of experience, and a little skill and luck, we'd be able to fake it the rest of the way. (*If we get in a bind we can always ask for a practice DF steer, or one of those other kind! Or, better yet, I wonder if Fuzz knows about radar vectors and flight following? Hmmm!*)

The flight plan now filed, we proceeded to our plane (a Cessna 172). I had the keys to the bird, having taken them from a hook on the board in the "readyroom." (*I wondered if anyone could pass by the board and pick up any set of keys.*) One thing I'll say about Ol' Fuzz, his preflight of the plane was very thorough. He even pointed out the nest that either tiny birds or field mice had begun to build. "No extra weight, they'll [twigs] blow out in the air," sayeth the pro!

Start, taxi, and takeoff, although very methodical, went without any glitches. Tower told us to squawk 1369 and contact Approach Control for clearance on course (*Stage III for those that remember – or even knew about it in the*



first place). I did the talking as Fuzz did the flying. Takeoff was to the southwest, and our course was to the northwest. Approach instructed us to proceed on course (*to the right, right?*). Fuzz commences his turn to the left, at which time I repeated Approach's instructions to "proceed on course," and gave a head nod to starboard. Bingo! We turned right and climbed on course, on heading, and at the appropriate altitude – 4.5!

At cruise altitude we could see our first checkpoint, nearly 50 miles up the river. Both VORs were tuned in and on course (didn't need to get an ID, it was nearly CAVU!). The first checkpoint was 25 minutes from takeoff, and we managed to get there only 10 minutes late (*headwinds, I guess*). The checkpoint, Howcome VOR, was clearly marked by the duty white building, next to the river on the west point of land, adjacent to an airfield. Piece of cake! We then proceeded to the next checkpoint some 12 minutes away (*only 3 minutes off on this leg*).

The final leg was about 30 minutes long, and straight up another river. The destination VOR, called Stream, was 5 miles to the northeast of Burgsville airport. Fuzz said that he could find it blindfolded, as he, *Chief*, and *Ol' Blue* had done a lot of their Fam Flights in this area some 35 years ago. (*So did I, some 5-10 years ago, but who was I to tell – I was just the navigator on this leg.*) He stated that there was a factory that gave the clue as to not only where the field was, but which also indicated the wind and the respective duty. Approaching what he thought was Burgsville, Fuzz attempted to find the factory. I finally decided to fess up and tell him that the factory "doesn't live there anymore"; that it was closed down several years ago. Notwithstanding, we found the field and called UNICOM for the preferred duty. Northeast was the duty this day. Some 22 minutes "overdue," Ol' Fuzz plunked the C-172 down, one-third the way down the 3000-foot strip, and came to rest in grand fashion. (*Piece of cake again. Not a bad flight for the first time in nearly 90 days!*)

Anyway, it was time for lunch.)

After discussing the first leg of the flight over a giant angusburger (*they also have shrunk with the times*), we briefed the flight back. Fuzz asked me to file while he went out to remove the many smashed bugs from the 172's messy windshield. "No sweat, Fuzz." The flight back to Central Muni was filed with FSS. Direct (*economy minded*), 3.5 MSL, 1 hour and 15 minutes en route, and, of course, in the remarks column — will avoid all restricted areas. We "manned up" (*a term the new guys use for "strapping-in"*) for the return trip with me as the pilot and Ol' Fuzz as the navigator.

Somehow I managed to fire up the 172, despite my looking all over the throttle quadrant for the "ignitors." A simple turn of the key got the plane purring like a cat. I taxied between several other light singles and twins, wondering where were the wingwalkers that I was so accustomed to in the core of active-duty years.

Having successfully evaded all the wings and tails, I taxied down the sod taxiway, adjacent to the duty (which was now into the wind). (*I never taxied off hard pavement, intentionally, before.*) Mag checks were OK despite a slight drop on the right. I smoothly cobbled it, and we were airborne within half the runway (*the quickest I've become airborne without JATO or the CAT!*). No gear to worry about bringing up, I turned "on course" (*to the left, of course*), avoided the nearby restricted area, and proceeded direct to our first checkpoint.

Fuzz, now the "nav," figured that we should be overhead the checkpoint 30 minutes after takeoff, based on a groundspeed of 110 knots (*or was it 96 mph?*). This steely-eyed devil could see the airfield about 40 miles off the nose, now about 20 minutes down the river. However, old cuzzin' weakeyes, Fuzz, spied it at the 10:30 position, about 10 minutes down the "other" river. (*It did have an airfield and a bridge, too, but the map showed that to be Slohammock airfield, some 25 miles off our intended course.*)


As we chugged along, smashing bugs and avoiding lazily flying hawks, at 3500 feet, Ol' Fuzz reoriented himself and fessed-up that our real checkpoint lay on the nose about 20 miles away. We crossed the intended checkpoint 32 minutes after takeoff (*headwinds both ways, I surmised*). The next checkpoint would be common to both of us — Central Muni, 50 miles off the nose. ETA: 30 minutes, \pm any change in winds.

We picked up the homeport and contacted Central

approach for radar vectors to ILS final approach course — a recommended way to help the flow and positive control of all traffic (*that's what we hear, so I was game to try it*). My approach was not as precise as it used to be, but, despite chasing the needle a little bit, I managed to get it over the runway, take a cut, and drop it on the "numbers" just like the old days! The landing may have been a little bit different, but it didn't cause either one of us any undue pain.

The "refresher flight," nearing its end, had one more aspect that took Fuzz back a little. Clearing the duty at Central Muni, we were required to "hold short" for outbound traffic. Those sleek King Aires, Falcons, and Citations taxied out as we awaited further taxi clearance. No joy on ground control (*could it be because we were still on Tower?*). Finally, a passing Arrow held up his mike and patted his head (*like HEFOE, it appeared*). We got the picture, and placed the VHF mixer switch in "receive" — at which time we were cleared to the fuel pits at the local FBO.

I secured the engine, got out and watched the groundcrew fuel the 172 to the tune of 51 big ones. (*That's \$25.50 apiece for the trip up and down the river! Mere peanuts for the presidential pleasures of being airborne again.*) As we taxied back to our flight line, a beautifully restored, smooth sounding, powerful (*compared to ours*) bird of old age lifted off into the blue. An aircraft that Ol' Fuzzy and I had flown some 40 and 25 years ago, respectively — the old, but rich SNJ! (*Things haven't changed that much after all. Or have they?*)

With the 172 shut down, chocked, and tied down, I informed Fuzz that I had to get back to work (*double-dippin' to pay for flights like this*), and that we should do this again (*in a smoother manner, of course*). His reply, "Sure, Toade, but I think I'll check with the aeroclub about the next FAA-sponsored refresher class, or something along those lines!" Yes, things have changed, and mostly for the better, although some will disagree. Ol' Fuzz even knows the new names of the checkpoints now. With that I parted, as Fuzz filled out the various logbooks (*I assume*), and returned to my present job. What's that, you may ask? Aviation safety, what else? It's the only way to fly. Right, Fuzz? 

The incidents in this anonymous story were actual and editorialized only to lend a lighter side to the flight. However, it does sound as though some improved supervision and training may be needed in this club. — Ed.

Quinine and the Aviator

By CAPT Michael J. Dunne, MC, USN
Armed Forces Institute of Pathology

OVER 300 years ago, the Countess of Chinchon first broadcast to the world, from Peru, the secret of the powdered bark of a tree that, for centuries, had made a bitter brew for remote South American Indians and which formerly made life livable in the tropics. In her honor, the renowned physician Linnaeus named this strange powder "cinchona." From Occident to Orient, from Javanese plantations to recently planted Guatemalan fields, from a pound of priceless seed grown deep in an Andean jungle, to a Dutch-controlled world monopoly, the history of quinine moves dramatically across three centuries — one of the richest treasures of the tropics! But what has quinine to do with aviation today?

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For many years, the presence of trace amounts of quinine in Armed Forces Institute of Pathology toxicology specimens, obtained from military aircraft accident fatalities, has been regarded as *no factor in causation of aircraft accidents*. In a recent high-performance aircraft accident, low levels of quinine were found in the pilot's tissues. The question of the pilot's disorientation in flight and his failure to recover indicated a probable loss of normal vestibular function (equilibrium). In consultation with ear, nose, and throat specialists, it was determined that quinine accumulates in the watery fluid within the inner ear over long periods of daily ingestion. From a review of medical literature, it appears that quinine affects the vestibular apparatus (equilibrium sense) and that it may be a factor in a pilot's failure to recover from disorientation in flight. The previously mentioned pilot had a habit of drinking tonic water each day; from the circumstances of the accident, the disorientation that occurred was quite possibly related to the effects of quinine on vestibular function.

Quinine is the most frequently used alkaloid of the

cinchona bark and ranks high among the drugs and chemicals capable of causing nerve deafness and vestibular impairment. Invaluable as a treatment for malaria, quinine is nevertheless a protoplasmic poison that has a particular affinity for the retina, the auditory nerve, and the vestibular nerve of the inner ear. Although it is most frequently used in the treatment of malaria, it is employed therapeutically for diseases of the upper and lower respiratory tract, Meniere's disease (a chronic disease with hearing loss, ringing in the ears, and loss of equilibrium), tic douloureux (a severe pain over part of the face), influenza, cardiac diseases, various forms of skin infections, and leg muscle cramps encountered during sleep. Thirty years ago, quinine was used to induce normal labor and abortions.

In small dosage, quinine may cause some persons to experience a rise in body temperature, skin rash, ringing of the ears, deafness, and vertigo. Hypersensitivity to quinine may occur in the habitual user without obvious clinical signs or symptoms. Animal experiments have established that quinine, administered by whatever method, reaches the brain and spinal fluid rapidly. It has been shown that quinine is concentrated in the brain and peripheral nerves. Quinine's toxicity to the inner ear may be present without overt symptoms such as deafness, vertigo, or uncontrolled eye movements.

Clinical studies will be performed to determine exactly what level of quinine is harmful to vestibular function. Until these studies are complete, quinine is not recommended, in any form, for military aviators on flying duty. ◀

CAPT Dunne is assigned to the Division of Aerospace Pathology at the Armed Forces Institute of Pathology, Washington, DC 20306.

LANDING, TAKEOFF ACCIDENTS

OFFICIALS at a U.S. airline said most people are aware that a large number of aircraft accidents occur during takeoff or approach and landing.

Then, a British airline took a closer look at the cold, hard statistics of 217 worldwide jet "total loss" accidents from 1962 to 1976, and came up with a graph comparing the percent of flying time devoted to various aspects of flight with the percent of accidents that occurred during those times.

The "typical flight" portrayed is for an airplane that is flown 3000 hours per year at a rate of 8:13 per day, and which makes five takeoffs and landings each day.

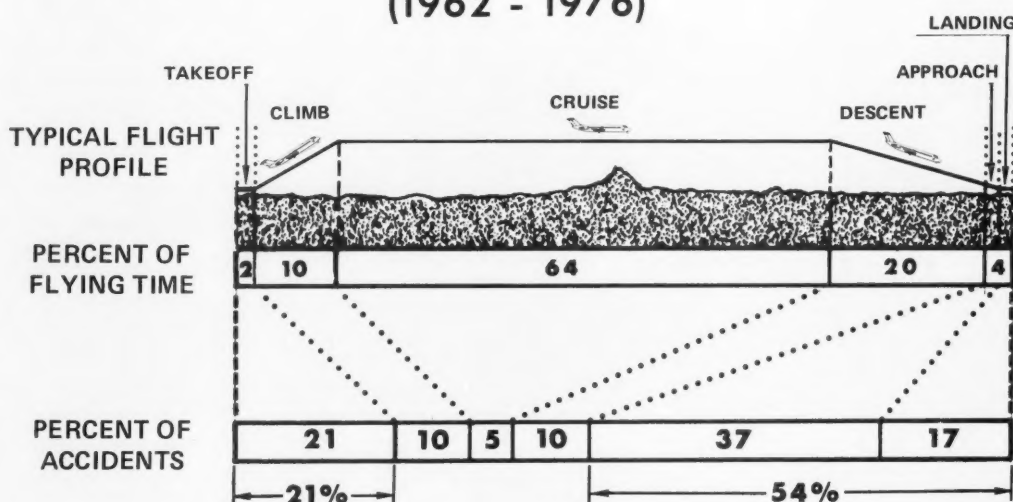
Although takeoff consumed only 2 percent of the flight time, it accounted for 21 percent of the aircraft destroyed.

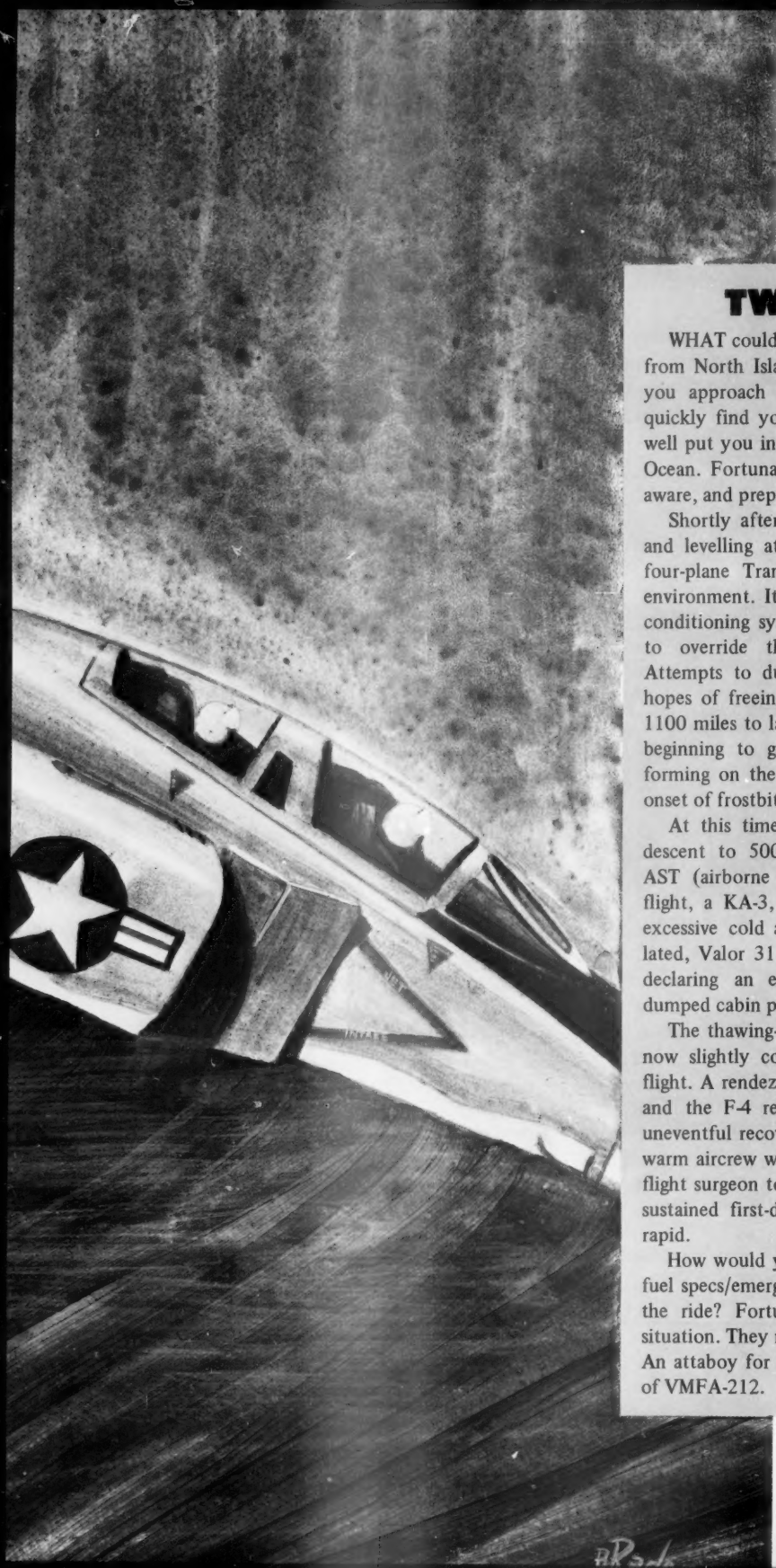
Approach and landing, while consuming only 4 percent of flying time, accounted for 54 percent of the destruction. *Combining these two figures tells the grim story that 6 percent of the flying accounted for 75 percent of the lost airplanes.* (See chart below.)

Reprinted from Flight Safety Foundation
Accident Prevention Bulletin, MAR '79

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ANALYSIS OF 217 'TOTAL LOSS' ACCIDENTS (1962 - 1976)





TWO COOL DUDES

WHAT could be more uneventful than a 6-hour TransPac from North Island to MCAS Kaneohe Bay, HI? Surely, if you approach a TransPac with this attitude you could quickly find yourself in a "decision box" that might very well put you in a one-man raft in the middle of the Pacific Ocean. Fortunately, the crews in this narrative were alert, aware, and prepared for all contingencies.

Shortly after completing the second air refueling point and levelling at FL310, Key Valor 31, the lead F-4 in a four-plane TransPac, attempted to warm up his cockpit environment. It immediately became apparent that his air-conditioning system had failed full cold. Repeated efforts to override the system manually were unsuccessful. Attempts to dump and reset the cabin pressurization in hopes of freeing the turbine also failed. With a little over 1100 miles to land, level at FL310, we now find an aircrew beginning to get very cold. In short order, frost began forming on the boots of the pilot, and the crew felt the onset of frostbite.

At this time, fuel calculations were recomputed for a descent to 5000 feet and flight at that altitude to the AST (airborne standby tanker). The Pathfinder for the flight, a KA-3, now offered 7000 pounds of fuel. With excessive cold and numbing setting in, fuel figures calculated, Valor 31 plugged the KA-3, topped off, and, after declaring an emergency, descended to 5000 feet and dumped cabin pressure.

The thawing-out process was slow but welcome, and the now slightly cold F-4 flew in radar trail of the original flight. A rendezvous was made with the AST at 5000 feet, and the F-4 received another 7000 pounds of fuel. An uneventful recovery was made at Kaneohe, where the now warm aircrew was met with leis, *Primo* beer, and the trusty flight surgeon to check for frostbite. The pilot had, in fact, sustained first-degree frostbite, but recovery was full and rapid.

How would you have fared? Are you always up on your fuel specs/emergency procedures, or are you just along for the ride? Fortunately, this aircrew was on top of the situation. They reacted calmly, "coolly," and professionally. An attaboy for Maj George Tullos and Capt Lance Wismer of VMFA-212. ◀

MOUNTAIN DEAD AHEAD

A P-3 crew departed Homeplate to conduct a familiarization and training flight. The pilots decided to shoot some instrument approaches and climbed to 8000 feet to proceed to the IAF. Upon reaching the IAF, they turned inbound to execute a low TACAN approach.

They were in actual IMC and headed for the 12 DME arc. They descended to 4000 feet, a mandatory crossing altitude, for the approach to Runway 24. The pilot set the final course in his HSI and had the TACAN selected for bearing information on the No. 1 needle. The copilot had the TACAN selected for the course and the field radio beacon selected for the bearing.

Shortly after passing the 020 radial, the tail of the No. 1 needle settled on 044 degrees (the radial where the inbound turn to final is made). Both pilots were satisfied that they were about to intercept the final course of 233 degrees. The pilot then descended, inbound, to get to 1500 feet when crossing the FAF. While turning, the pilot saw the No. 1 needle pointing to about 250 degrees. However, the course deviation indicator remained pegged full left.

While the pilot was trying to resolve the ambiguous indications, the copilot got on the horn to the tower and stated the crew's intentions for remaining approaches. The P-3 continued inbound as both pilots interpreted their instruments to indicate they were left of course and correcting. They were still turning right and still descending (out of 1800 feet) when Homeplate Approach transmitted to the aircraft, "Turn left immediately to 090 and climb to 5000 feet."

The P-3 pilot thought they were left of course when, in fact, they were right of course and had a mountain boresighted. (It was only 2200 feet high, but they were below that altitude and going lower.) The radar controller at Homeplate was directly responsible for saving the aircraft and crew. The mountain was 1 mile directly ahead after they completed their turn.

Now, why was this near-tragedy so close to happening? Let's look at some possibilities:

- There could have been a momentary instrument malfunction. The pilot's No. 1 needle was pointing right of the aircraft's heading — indicating the P-3 was left of course. The pilot's course needle was pegged left — indicating they were right of course. There were no previous discrepancies reported on the gauges, nor did the discrepancy occur again during the remaining 3 hours of flight.

- The pilot's scan could have broken down and he could have concentrated on only one gauge for information. The



pilot's No. 1 needle, TACAN selected, indicated that the aircraft was left of course. The No. 2 needle, radio beacon, indicated he was right of course, and the course deviation needle indicated he was right of course.

- The copilot was not exercising his primary responsibility as safety pilot. His transmissions, during the critical final stage of the approach, could have waited.

- The NAV/COMM was aboard the P-3 to display the mountainous terrain on the pilot's display, using sonobuoy numbers to depict the position and elevation of the mountains. The crew radar operator was aboard to monitor the approach using the P-3 radar. The third pilot was in the cockpit monitoring the approach. None of the crewmembers recognized the danger they were in.

The incident occurred with a pilot who knew the area. The copilot was an instructor pilot who had flown the same approach many times. A qualified navigator and radar operator were aboard just to prevent something like this from happening. A safety review had been completed the previous week. Perhaps, with all these pluses, the crew was overconfident and, to a degree, complacent. One thing for sure — had they been employing their full bag of equipment and efforts, there would not have been an incident.

This crew owes their lives, as well as drinks and ice cream for life, to the approach controller who was doing his job completely, and turned them before they flew into the mountain.

Port Side Plane Guard

A Better Way?

By CDR A. A. Granuzzo
HS-15

FROM the folks who gave us the angled deck, the mirror and steam catapult, we may also want to borrow another idea. For as long as there have been rescue helicopters and carrier operations, the Royal Navy has stationed the primary rescue helicopter on the port side. In the Royal Navy, the task is accomplished by a detachment of highly trained professionals, independent of the ship's ASW helicopters. On launches, the SAR helo checks aircraft surfaces and safety pin removals; on recoveries they are tasked with backing up the LSO on hook, flaps, and wheels. The rescue aircrewman is a qualified diver, and Royal Navy scuba-equipped wetcrewmembers have saved aircrewmen trapped in cockpits well below the surface of the sea. This officer's experience with Port Plane Guard was gained on exchange duty with the Royal Navy on HMS EAGLE some years ago.

The USN capability does not approach that outlined above. We no longer have dedicated plane guard dets and, to my knowledge, have never allocated resources to provide scuba-trained rescue aircrewmen. These might well be considerations for the future.

The question is—can we significantly improve our current capability without an allocation of additional resources? With the simple procedure of moving the rescue helo to the port side, where most survivors end up, I believe we can.

When Helicopter Anti-Submarine Squadron FIFTEEN embarked upon its assessment of this procedure, information concerning mishaps in the CV launch/landing

environment was requested from NAVSAFECEN for CY-73-77.

Below is a box score of the pertinent information:

	Ejection Accidents	Total Aircrew	Fatalities	Median Time for Rescue Pers to Reach Survivor
Day	29	44	10	4 min.
Night	19	29	9	15 min.

The two figures which we believe are most significant are the higher percentage of night fatalities and the average time for the rescue vehicle to arrive on top the survivor at night.

While a marginal improvement in the daylight time to reach the survivor can be achieved, the most dramatic potential for improvement is in the night, IFR environment. Current CV NATOPS procedures depict night plane guard patterns which take the rescue helicopter as much as 4 miles from the CV on the starboard side. In the event of a mishap at the CV, the rescue vehicle must make a 2-3-minute transit to the scene, set up a search, locate survivors, transition to a hover into the wind, and effect a rescue. This all takes a great deal of valuable time. By reducing the time required for the helicopter to locate a survivor and execute a transition to a hover, where the rescue aircrewman can be deployed, we may well be able to reduce the fatality rate.

The recommended position of the SAR helo is depicted in Fig. 1. The suggested configuration and coordination is as follows:

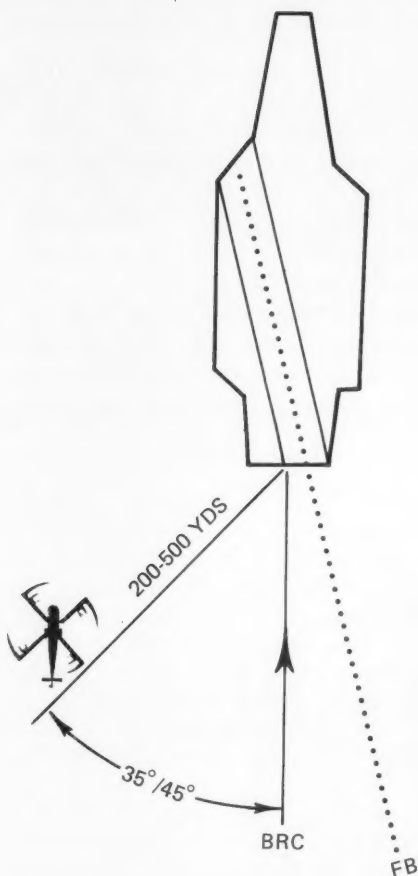


Fig. 1

- Helicopter aligned with BRC at 100-120 feet, with altitude coupler engaged and cycle coupler off; speed pots set for doppler hover.
- Left-seat pilot monitors instruments; right-seat flies the aircraft, maintaining position visually.
- Tail rotator off.
- Heading may be adjusted slightly for crew comfort/airflow.

- Position may be moved forward for launch only.

The position is very comfortable and the CV deck lighting provides a solid horizon which instills confidence on the darkest of nights.

In the event of a mishap with survivors on the port side, the helo crew will have observed the ejection/ditching and the right-seat pilot would commence slowing the aircraft while moving toward the survivor. The left seat (copilot)

starts reducing altitude by direction of the pilot. The pilot should probably retain control throughout the evolution. As the survivor is approached, his position is marked in the normal manner, and standard control, swimmer deployment, and rescue procedures are carried out. While the downwind survivor would normally be approached first in a multiple ejection, the helo crew is in a position to make a judgment as to which survivor may need the fastest response.

Our squadron has been evaluating this procedure throughout type training, with positive response from the ship, LSOs, and the remainder of the air wing. Our squadron pilots are generally enthusiastic, since they feel they can rapidly effect a rescue without a potentially long search phase.

The major disadvantages and areas of concern center around the SH-3 and include:

- Power required and vibration/wear on components.
- Single-engine failure.
- True wind direction/velocity in relation to BRC.
- Crew coordination techniques.
- Crew fatigue and cabin environment.

Helicopter Anti-Submarine Squadron FIFTEEN is recommending a CV NATOPS change to permit Fleet-wide use of this procedure, on an optional basis, for a period of evaluation. If we can eliminate the agonizing search phase in the sea of lights that normally accompanies a night CV mishap, and get to the survivor in 3-4 minutes vice 15 minutes, we are going to save some lives. ▶

"HaBu 25, Control . . . Tower advises red deck. Emergency in progress. Marshal TACAN One. Angels one point five. Expect further clearance one-zero."

Hmmm. Pretty average hop up 'til now. Wonder what's happening down there? . . . Well, let's see. Fix. Parallel outbound. Turn. Altitude is on. Airspeed? One zero looks OK. Now, around we go. Bird's healthy. Gas is good . . .

It was all downhill from there — they couldn't clear the deck and we had to bingo with little fuel to spare. In the goo, big headwinds, too . . . not a good deal, but we made it with some good instrument work and maybe more than our share of good luck.

Ever been there or some place like it? Lots of folks have, and many were not so lucky. In fact, of 11 helos (Navy/Marine) lost over the past 10 years due to fuel starvation, records indicate that better than half of these losses could probably have been prevented had good common fuel sense been exercised. So let's review what we might have forgotten, and teach our birds to —



Guzzle Not!

By Maj J. P. Cress, USMC
Aviation Safety Programs, NPGS

CLEARLY, the measures to be taken in stretching our fuel depend heavily on the assigned task. If we're "marshalling" in TACAN One, we want to burn as little fuel as possible for a given time in the air. That is, we want endurance. However, if it's bingo time, we need the most miles for the least gas, and we call that range. While the techniques for maximizing range and endurance differ

somewhat, the list of variables for each is much the same: gross weight, airspeed, altitude, configuration, and wind. Let's first review the effects of each of these variables on endurance.

Needless to say, power required, and thus fuel consumption, varies directly with gross weight for a typically configured SH-2F at sea level standard conditions

FUEL FLOW vs TAS: SH-2F (Sea Level)

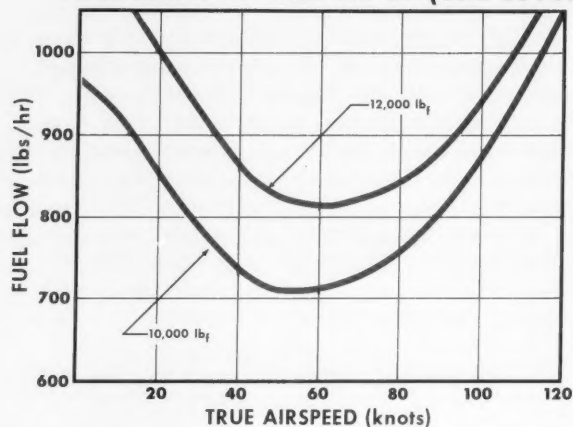


Fig. 1

(see Fig. 1). This same figure also shows the variation of fuel consumption with true airspeed. To maximize time in the air, we want the TAS which corresponds to minimum fuel consumption (maximum endurance). This speed is defined by the lowest point on the curve for the selected gross weight.

It's no secret that turboshaft engines operate more efficiently at higher altitudes. This is a result of the lower outside air temperatures encountered with increasing altitude (excluding temperature inversions, of course). We're saying that, even with lower density and pressure, the engine can deliver required power with lower fuel consumption at higher altitude. We must qualify this statement by saying that the optimum endurance (or range) altitude is very much a function of gross weight and that the optimum altitude increases as gross weight decreases.

What about configuration? Here we're talking about aerodynamic cleanliness — with or without a load on the hook, external stores (tanks, MAD birds, rockets) or no stores, cargo doors open or closed, etc. Let's consider a CH-46E, for instance, with and without the infrared suppressor (EED). Representative fuel consumption curves for the two configurations are shown in Fig. 2 for a gross weight of 21,000 pounds and at a pressure altitude of 5000 feet. Note that the fuel consumption is approximately 40 pounds per hour higher for the EED configuration at best endurance speed, and that this difference increases rapidly with increases in TAS. On a standard internal fuel load, this means 5 minutes less time in the air with EED as compared to a "clean" CH-46E at best endurance speed (or 12 minutes and 27 miles at best range speed).

Unless we're talking about hovering endurance (you SONAR dippers will want to, since wind on the nose

FUEL FLOW vs TAS: CH-46E (21,000lb)

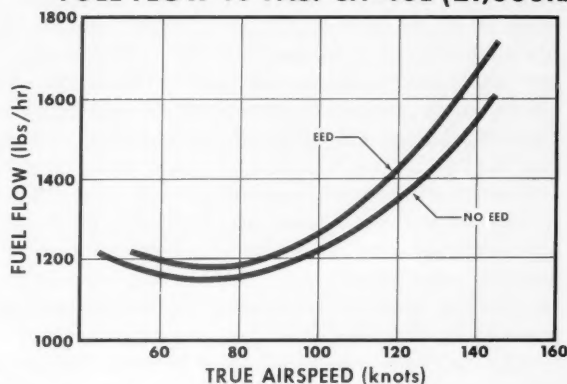


Fig. 2

improves hovering endurance), wind is not a factor to be addressed in an endurance calculation. But it surely is important in range, as every nugget knows.

Range is distance over the ground (or water!), and groundspeed is clearly greater or lesser for a given airspeed, depending on the wind. Headwinds obviously mean less distance over the ground for a given fuel load, and thus lower range. But, what else does wind mean to the pilot who is trying to maximize his range? Let's now throw airspeed into the range discussion along with wind.

To maximize range, we want to fly the speed which gets the most miles for the least gas. If we consider a no-wind case, this condition is shown graphically by line NW (no wind) in Fig. 3 for an AH-1J. The TAS to fly for best range is shown at point A. Now look at line WW (with wind), and note that this is a case where we've assumed

FUEL FLOW vs TAS: AH-1J (9500lb)

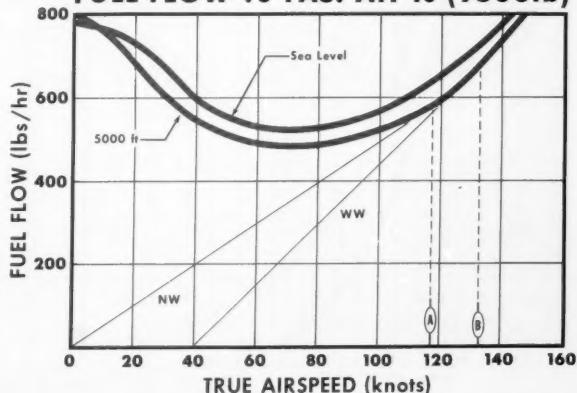


Fig. 3

40 knots on the nose. Clearly, the TAS to fly for best range is now that corresponding to point B — about 15 knots higher than that for the no-wind condition. Thus, wind is a factor in the selection of best range airspeed because it alters the ratio of groundspeed to fuel consumption, a ratio which must always be maximized for best range. (A quick check of several Fleet helos indicates that each 10 knots of headwind will dictate a 3-4 knot increase in best range TAS.)

Needless to say, higher gross weights and dirty configurations mean more fuel per mile and less total range; they also mean less time in the air. Additionally, more than any other factor (save structural limits imposed by rotor blades), the dirty configuration and resultant parasite power losses may force undesirably low cruise airspeeds.

Thus far, we've quickly addressed effects of airspeed, altitude, configuration, and wind on range and endurance. Rotor speed, a parameter included in the list of gas-saving variables for some vintage aircraft, as well as a few current models used by other services, is on the list of NATOPS approved range/endurance variables for only one current Fleet aircraft. One other variable not yet discussed, but worth a paragraph or two, is something we might call

"powerplant management." (Note: If you fly single-engine helicopters, read no further!)

In Fig. 4 we see a plot of shaft specific fuel consumption (uninstalled) for the T700-GE-401 engine, which will power LAMPS Mk III. Note that the graph shows fuel consumption as a function of power setting for various altitudes and that it illustrates an interesting little twist. This engine, like other turboshafts, is more efficient at high power settings than at lower power demand. This is not to say that these engines burn less fuel at high power. What is said is that less fuel will be burned *per unit of power output* when the engine works at maximum continuous power, for instance, as compared to a lower power setting.

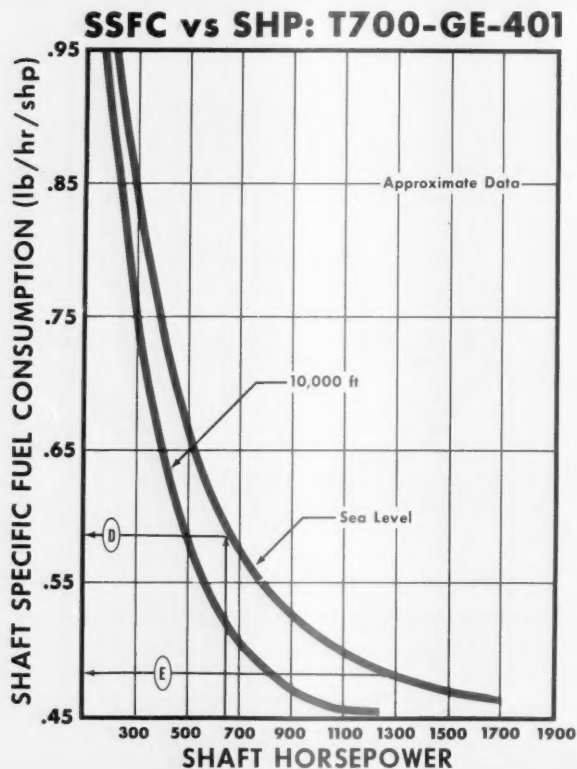


Fig. 4

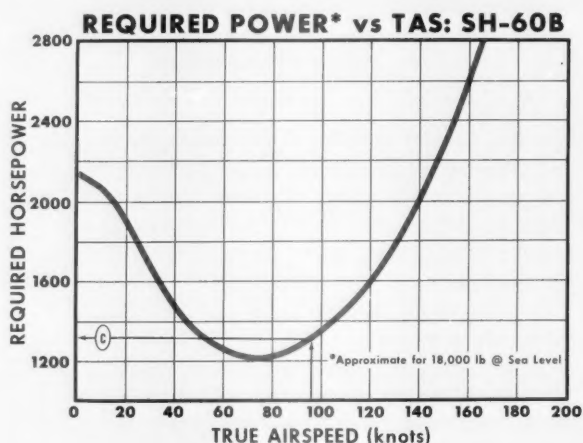


Fig. 5

To illustrate the point, look at Fig. 5, which is an estimate of power required for an 18,000-pound SH-60B (at sea level) vs true airspeed. The chart shows that approximately 1300 horsepower (see point C) are required for straight and level flight under these conditions at 95 knots. If this load is shared equally by two engines, each must develop 650 horsepower. Using this power setting in conjunction with Fig. 4 (see point D), we see that the engines will consume:

$$2 \times .591 \times 650 = 768 \text{ pounds per hour}$$

However, the maximum continuous power output of one engine (sea level) is 1340 horsepower and, for the example chosen, single-engine flight is clearly possible. Under this condition (see point E), the single engine would consume:

$$.482 \times 1300 = 627 \text{ pounds per hour}$$

Provided that the "unnecessary" engine is shut down, this indicates a fuel savings of 141 pounds per hour for single vs dual engine operation.

With the exception of the H-3, this interesting aspect of the turboshaft is not addressed in current NATOPS manuals,

and for good reason. First of all, most of us can't carry enough fuel to stay in the air long enough to make it pay off. Second, and more important, most of us don't have an engine whose maximum continuous power limits would allow application of this principle. Third, it would be only the most rare and most dire of circumstances under which a sane naval aviator would volunteer the security of two engines just to save a little JP. However, for those who spend a lot of time ground taxiing or ground turning for other reasons, perhaps this idea could save enough fuel over a long haul to justify its use on the deck, even with our present machines.

On a recent overseas tour, a neighboring helo squadron launched a bird on a routine passenger pickup to a nearby island. The pilots departed with less than a full bag of fuel and delayed for several minutes (while turning) on the deck, awaiting arrival of the passenger. The weather was not particularly bad, but winds fought them on the way back, making the situation worse. The engines flamed out a few miles from shore on the return leg, and the resulting autorotation was not the best. All were lost at sea.

We've just talked about ways to keep fuel lines wet and fannies dry. Perhaps this crew didn't know them. You do. Review them, use them, and don't get caught sopping.



15

Delta Sierra!

THE dual flight was scheduled as a night currency and biennial check-flight for the private pilot, given by a CFI (Certified Flight Instructor). Aircraft preflight was done in the hangar due to the outside weather which was: clear, 3°F, winds out of the NW at 15-20 knots, ice on the runways/taxiways, and blowing snow. (Sounded like a night that they should have stayed in the barn!) The scheduled airplane and another from the club were removed from the hangar by the pilots and two other flying club members, utilizing towbars.

Prestart, start, poststart, and pre-takeoff checks completed, the private

pilot and his CFI proceeded with an uneventful flight (they thought). They flew to a municipal airport, a half-hour away, where they shot three landings before returning to homebase. The pilot made his final landing, taxied in, shut down, returned the plane to the hangar, "upped" the bird, and both he and his CFI secured for the night.

The following morning the crash crew was on a routine FOD patrol and found a towbar on the side of the duty runway. An ensuing check revealed that the subject towbar belonged to the aeroclub. Sure enough, an investigation showed that it was originally

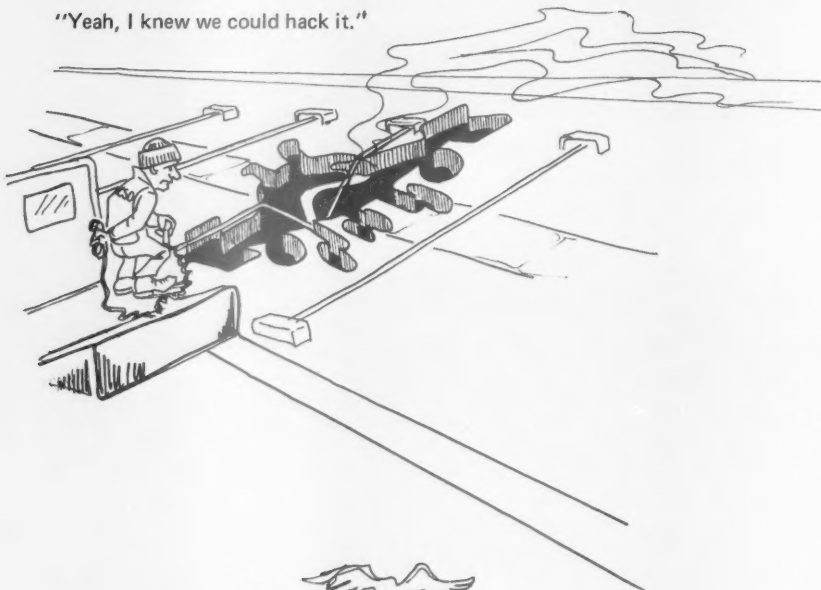
attached to the aforementioned airplane. On takeoff, the towbar had rotated about the free-castered nosewheel, up and into the prop, curling the tips three-quarters of an inch! There were matching marks on the towbar and the prop to corroborate this incident. Had the pilots followed the checklist to a "T" (Step 7 on the preflight checklist states: *REMOVE THE TOWBAR*), this incident wouldn't have occurred. Even a quick walkaround before engine start could have prevented this one.

A hearty "poorly done" is in order for these two pilots. ◀

Is safety real

"I told you we wouldn't bolter."

"Yeah, I knew we could hack it."



16



"Hurry up and strap in - - - I did the preflight already - - - we have to make our target time!"



"I think we can make it - -
of tailwind, and 500 pounds mo



"Crew rest is important, important, right?"
"zzzzzzzzzzzz"

lly for sissies?

By LCDR James M. Burin, Whidbey Island, Cartoons by LTJG Frank Giblin



... if we were just 5,000 feet higher, had 500 knots
and more gas."



... but FLIGHT TIME, now, that's REALLY

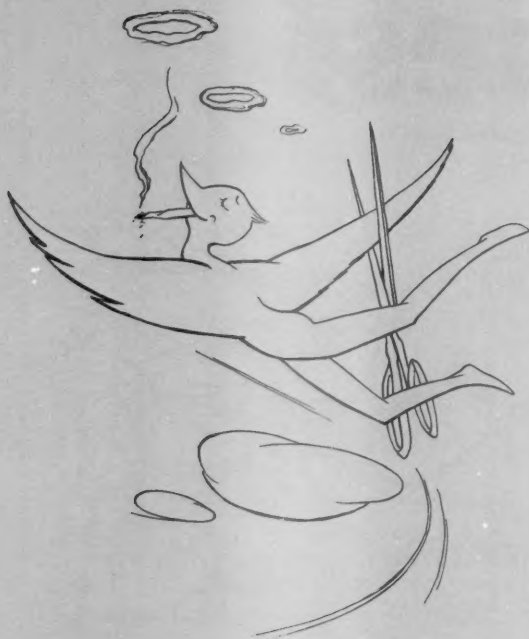


"Sure, a radar altimeter is nice to have at night,
but it's pretty much VFR."

17



"Taxi light!? Naw, I KNOW the turnoff is here
somewhere."



18

problems to anticipate with the growth of **MARIJUANA SMOKING**

By Hardin B. Jones, Ph. D.
Senior Scientist
University of California

Over the last several years, the use of marijuana within our society has dramatically increased. One must assume that the same is true within the naval aviation community. The following paper provides the most complete review we have found on the ramifications of marijuana use. It is presented here by permission of the Executive Health Report, P.O. Box 589, Rancho Santa Fe, CA 92067, holders of the world copyright.

TODAY, many adults smoke marijuana. Some start using marijuana to help themselves stop drinking. Some use it in an attempt to revive their failing sexual powers. Some find marijuana a substitute for tranquilizers or other medication. Some use the drug to keep up with the younger generation. Although the reasons older users smoke marijuana may differ somewhat from the reasons given by younger users (who may use it for peer identification or to alleviate social and sexual problems associated with adolescence and early adulthood), the deleterious effects are much the same. Those past the years when they plan to become parents may not worry so much about genetic damage as should younger users, but the damage to the brain and the sexual mechanisms caused by marijuana should still be a subject of concern.

For more than a decade, we have been subjected to a flood of articles, books, and reports supporting the idea that smoking marijuana is simple fun and has no serious consequences. Earlier observations that marijuana was linked to mental disorders, to the use of narcotics, and to personality changes have been declared "obsolete" or "exaggerated." That these early observations are now supported by scientific studies and that many of the early studies were carefully conducted have been ignored.

There are problems with many of the reports supporting the harmlessness of marijuana. First, examinations of marijuana smokers early in their use do not reveal the long-range effects. Second, as marijuana causes adverse behavioral changes that the user cannot recognize in himself, some investigators may have been deceived by their own experiences with the drug, because they cannot have assumed that marijuana would turn out to be as free of long-term effects as most well-tested medicines.

Throughout the same period that the promarijuana reports were being published, the World Health Organization has continued to warn against the use of marijuana. Although some promarijuana inquiries in the past were sponsored by the British and Canadian governments, these governments have since issued clear warnings about marijuana.

The effect of marijuana is probably never transitory.

Marijuana is an unusual drug in that the active ingredient, tetra hydrocannabinol (THC), is retained in the body for long periods of time. One study, conducted by Louis Lemberger of the Indiana University School of Medicine, has indicated that 30 percent of the THC is retained in the body at the end of a week. Similar retention occurs whether the users are heavily or lightly exposed to marijuana. From animal studies it appears that the 30 percent retained at the end of a week is eliminated much more slowly than the first 70 percent. Therefore, with repeated exposure, THC accumulates in the body.

THC is changed only slightly by metabolism. In this process, some is converted to a more psychoactive form. (There are about 50 cannabinoids in marijuana; those that have been studied retain their basic cannabinoid structure and fat solubility even though partly altered by metabolism.) THC is highly fat soluble and is, therefore, deposited in the fatty outer membrane of cells, but there is reason to be especially concerned about its effects on brain cells and on the reproductive process.

Damage to Cell Membrane. An important source of information on the toxic effects of THC on cells is the report of a symposium on marijuana presented at the Sixth International Congress of Pharmacology held in Helsinki in 1975.

More recently W. D. M. Paton, professor of pharmacology at Oxford, and Robert Heath, chairman of the Department of Psychiatry and Neurology at Tulane University, and their colleagues have shown the profound changes that occur in the surface membranes of brain cells in animals exposed to doses of marijuana within the range of typical human doses. Changes have been found to occur in the membrane of brain cells, red and white blood cells, liver and lung cells, and sperm.

Marijuana appears to injure the fine, hairlike extensions of the brain cell membranes that communicate with the other brain cells. Such damage is critical, for although each cell has tens of thousands of these connectors, the brain needs them all. They are the mechanisms of the mind.

One important study on the damage caused to the brain by marijuana has received too little attention. The late A. M. G. Campbell of the Department of Neurology, Bristol University, conducted a study of 10 consecutive cases of young marijuana users who showed marked behavioral changes. X-ray examinations of their brains revealed that all suffered from cerebral atrophy. The degree of atrophy correlated with the duration of marijuana use.

In the United States, Harold Kolansky and William Moore, professors of psychiatry at the University of Pennsylvania, were able to correlate the appearance of the symptoms of organic brain disease with marijuana use. In the *Journal of the American Medical Association* (June 2, 1975), they stated: "In our reports, we detailed the toxic psychological effects of cannabis use in 51 of our patients, all of whom demonstrated symptoms that simultaneously began with cannabis use and disappeared within 3 to 24 months after cessation of drug use. Moreover, a correlation of the symptoms to the duration and frequency of smoking was established. When these observations were coupled with the stereotyped nature of the symptom seen, regardless of psychological predisposition, we presumed that with intensive cannabis use, biochemical and structural changes occurred in the central nervous system."

That marijuana can cause brain damage has recently been confirmed by Robert G. Heath. In his study, Heath exposed monkeys for 6 months to doses of marijuana corresponding to moderate and heavy doses. Before the brains of the monkeys were examined, they were taken off marijuana for 8 months. The site and degree of brain atrophy in the monkeys were similar to those in the young men in the Campbell study. Heath also examined the hair-like extensions of the brain cell membranes and found that these synaptic structures were also altered.

The findings of the Heath study were important confirmations of the Campbell study. The brain damage associated with marijuana observed in these two studies appears to account for the behavioral changes often observed in marijuana users.

Genetic and Embryologic Damage. THC has been associated with genetic changes through the suppression of cell division and the alteration of protein synthesis. E. Sassenrath (in the *8th Technical Review on Genetics and Drug Abuse*, August 1976) has reported recent findings on the increase in malformations in the offspring of monkeys exposed to marijuana. These results, the first definitive findings on primate malformation associated with marijuana, confirm the results of earlier studies involving laboratory rodents. As many developmental abnormalities were found in the offspring when the father monkey alone was exposed to marijuana as when the mother was.

Even before Sassenrath's study was published, there was reason to suspect an association between malformation in human offspring and exposure to marijuana. Statistical tabulations on the number of malformed infants born in the United States over the past decade are now available. Although malformations had been on the decline in the United States for 30 years, since 1970 (coincident with the rise in marijuana use) there have been striking increases in malformations of the hip joint and of the cardiovascular system. It will take several years to compile more complete data, but it seems probable that marijuana use is the cause of this epidemic of malformation.

Two major studies have shown genetic and developmental damage in laboratory rodents after exposure to marijuana. One unpublished study, conducted by de Paul Lynch of Saint John's University, New York, examined the transmission of defects to succeeding generations. Excessive abnormalities appeared in two generations after exposure of the original animals. In this instance only two generations were studied. The other study conducted by Peter Fried of Carlton University, Canada, establishes a variety of genetic changes in offspring of rats exposed to marijuana. Developmental abnormalities were found to be equally frequent after the exposure of either male or female parents.

Continued

There are indications that the risks involved with "normal" marijuana use probably exceed the genetic risks associated with exposure to sublethal levels of radiation.

Damage to the Respiratory System. *With marijuana, because fewer cigarettes are smoked, less carbon monoxide is taken up in the blood. However, the lungs of the marijuana smoker become more irritated than those of the tobacco smoker.*

The correlation between cigarette smoking and lung cancer, emphysema, and other respiratory problems is well known. Emphysema is found in 52 percent of those who smoke more than a pack of cigarettes a day; only 3 percent of nonsmokers develop emphysema . . .

Tobacco smoking diminishes lung capacity. The amount of oxygen transported in the blood is decreased when some hemoglobin unites with molecules of carbon monoxide rather than oxygen. In addition, the lungs are irritated by the smoke and become inflamed.

With marijuana, because fewer cigarettes are smoked, less carbon monoxide is taken up in the blood. However, the lungs of the marijuana smoker become more irritated than those of the tobacco smoker. The irritation is greater because THC is more tightly bound to the carbon particles in the smoke than nicotine is, and, in order to get an effect, the marijuana smoker must inhale deeply and hold the smoke in his lungs. After even a short period of exposure, as the carbon particles accumulate, the lungs of the marijuana smoker change permanently from pink to black.

According to the Leuchtenbergers, working at the Institute of Experimental Cancer Research in Lausanne, Switzerland, marijuana smoke causes a greater range and degree of damage to lung cells than tobacco smoke. Studies by the U.S. Army indicate that lung impairment occurs more rapidly with marijuana. Precancerous lesions have been observed in the air passages of the lungs of marijuana smokers, and autopsy examinations of the lungs of heavy marijuana smokers have revealed severe breakdowns in the lung structure.

Marijuana vs. Alcohol. *The marijuana user is under the influence of the drug even between highs.*

Marijuana is often said to be like alcohol, but the two drugs are not at all alike. THC, the principal active ingredient in marijuana, is highly soluble in fat and insoluble in water. THC remains in the fatty structures of cells for long periods and, with repeated use, accumulates there. Alcohol is a water-soluble food and is metabolized to provide cell energy. It leaves the body rapidly and completely. There is no residue.

Molecule for molecule, THC is 10,000 times stronger than alcohol in its ability to produce mild intoxication. For example, one drink containing 10 grams of ethyl alcohol is

metabolized in an average-sized person in about 1 hour into carbon dioxide, water, and acetone: 50 grams of alcohol produces mild intoxication and is metabolized in about 5 hours. Only 5 milligrams of THC are required to produce the same degree of intoxication. THC is removed slowly from the body, and many months are required to recover from its effects. The marijuana user is under the influence of the drug even between highs.

It takes decades for irreversible brain changes to appear in the heavy drinker. In the marijuana smoker, irreversible brain changes may appear within 3 years.

Marijuana is a complex mixture of many cannabinoids, each of which may have different effects on the body. In addition, the retention of the cannabinoids in the body means that even small doses may have adverse effects. Many of the adverse effects correlate with the duration of use rather than with the size of the dose, and there may be no truly safe range of exposure. With alcohol the adverse effects are brought about by the larger doses.

It takes decades for irreversible brain changes to appear in the heavy drinker. In the marijuana smoker, irreversible brain changes may appear within 3 years. Comparing alcohol and cannabis, W. D. M. Paton, professor of pharmacology, Oxford University, said: "The price [in health] for [marijuana] overuse is paid in adolescence or in early life; the price for alcohol overuse is paid in later life."

Along with cancer and cardiovascular disease, which are linked to cigarette smoking, alcoholism is another of the major health problems of this country. With the increasing use of marijuana, another major health problem has now been added. The problem is increased when marijuana is used with alcohol, as it often is. The two drugs in combination have a greater effect than the sum of their individual effects.

Sensual Drugs and the Pleasure Centers. Sensual drugs, of which marijuana is one, are drugs that the body has no need for but that give the user a strong sense of pleasure. These drugs affect the reflex centers located deep within the cerebrum that appear to be the site in the brain of the pleasures we derive from the body, including the pleasures of eating, feeling alive and fit, and sex. The pleasure centers are probably very important in the development of learned behavior, for, along with pain, they form the basis for conditioning. Self-activation, emotions and mood, memory storage and recall, perception and awareness, desire, satisfaction of appetites, and sexual activity are dependent on the balance of reactions in these reflex centers.

The pleasure centers become active after marijuana is smoked. This has been demonstrated by Heath, the discoverer of the pleasure centers. Heath observed the response to marijuana of humans who had undergone

brain surgery during which electrodes were placed at the site of the pleasure centers deep within the brain. He conducted similar studies on monkeys.

Although the pleasure centers are activated artificially by marijuana, the process would probably be more properly termed irritation, as the normal operation of the pleasure reflexes becomes impaired after they have been activated by marijuana. With heavy exposure to marijuana, the operation of the pleasure centers is suppressed. This suppression seems to correspond to what many researchers have called sensory deprivation. Sensory deprivation becomes progressively more severe the longer marijuana is used.

Even those who do not seem to be much affected by marijuana show a marked degree of recovery of their sensory perception and thought processes after several months of abstinence. The user's memory is the first thought process to improve; then his thought formation becomes more vigorous; finally, after several months of abstinence, he begins to notice that he feels more alive. The recovery of the sensual capacity comes last. The restoration of sexual inclination and capacity is a pleasant surprise to the person recovering from the chronic effects of marijuana. Although the user often was not aware of the gradual dimming of his mental and sensual functions, he feels his recovery and is impressed by this proof that marijuana had indeed had adverse effects.

I have had less opportunity to study adults than I have men and women in their late teens and early twenties, but they seem to follow the same pattern in their recovery: mental functions that had not been missed return, especially memory and the accuracy of thought formation. However, for older people, recovery may be slower. This is to be expected. The body metabolism gradually declines with age and decreasing physical activity. The accumulated marijuana is eliminated from the body through the circulation and is excreted in the bile; this process is vigorous in youth and declines as we get older.

On Addiction. Contrary to many reports and popular belief, marijuana is chemically addictive. It is addictive because the user can develop tolerance to its effects and suffers withdrawal symptoms when he abstains. The withdrawal symptoms are mild, so mild, in fact, that until recently they were not recognized as withdrawal symptoms. The mild symptoms include irritability, restlessness, and sleeplessness. More intense withdrawal symptoms have been observed in persons exposed for a few weeks to high doses of THC: restlessness, sleeplessness, rapid onset of irritability, loss of weight, nausea and vomiting, diarrhea, salivation, sweating, hot flashes, runny nose, hiccups, and electroencephalographic changes during sleep.

The mildness of the marijuana withdrawal symptoms is

explained by the fact that THC accumulates and is retained in the brain and body fat. Other sensual drugs that are not stored in the body produce more marked withdrawal symptoms.

Actually, there is an inseparable relationship between chemical and psychological addiction, and the two forms coincide when the addictive substance is a pleasure-giving drug.

Much debate over the dangers of specific drugs centers on the question of chemical or psychological addiction. A purely psychological addiction is usually considered controllable through conscious effort. Chemical addiction is considered less susceptible to mental control. Drugs thought to be mere psychologically addictive are considered relatively harmless; those that are chemically addictive are thought to have more serious consequences. Actually, there is an inseparable relationship between chemical and psychological addiction, and the two forms coincide when the addictive substance is a pleasure-giving drug.

The sensual drugs give pleasure chemically by stimulating the pleasure centers below the conscious level. The brain produces psychological responses to the chemical stimulation of its pleasure mechanisms. The brain's controls then become adjusted so that unmistakable discomfort results if the chemical is not supplied. Thus, chemical and psychological addictions are developed at the same time. Breaking a chemical addiction may be simple compared with breaking the psychological addiction. In fact, a psychological need for chemically-induced pleasure drives even occasional users to repeat drug use.

On Marijuana and Sex. *The magnification effect fails, and the sensory endings become anesthetized.*

Some adults begin to use marijuana in an attempt to revive their failing sexual powers. They say marijuana does this by expanding the sense of time and by increasing the senses of touch, sight, and hearing. The aphrodisiac effect some users claim marijuana has can also be explained through the power of suggestion. Because the user believes in the effect, he actually feels the effect, at least for a time.

If the user, however, becomes tolerant of the drug and begins to take larger doses or more potent kinds of marijuana, he may find that he is decreasing the amount of sensory information his brain interprets as pleasurable. The magnification effect fails, and the sensory endings become anesthetized. The sense of touch diminishes. As a result, although marijuana may seem to enhance sex at the beginning when taken in small doses, it becomes progressively less satisfying as a sexual stimulant.

Older users who take marijuana to enhance their sex lives may find that at first the novelty itself increases their desire and makes the sex act more exciting. With continued

use, however, their pleasure usually decreases. If they stop using the drug, they may find that they have become conditioned to arousal only with the aid of the drug and so cannot perform without it. If they are willing to try higher doses, the numbing effect increases and they may have difficulty reaching a climax. They may blame their difficulties or impotence on advancing age. Many of them, however, could probably recover their physical and mental health through the proper effort.

The vigor or failure of the sexual capacity is usually not dependent on the sexual organs. The organs are merely appendages of the skin, and except for trauma or prolapses that may affect either man or woman and which rarely occur, the sexual organs remain mechanically functional for the life of the individual. The sexual reflexes — sexual inclination, erection, preorgasmic events, orgasm, and postorgasmic changes — all center in the brain.

Many separate brain functions are involved in the sexual cycle, including the functions of both divisions of the autonomic nervous system (the divisions of the brain below the level of consciousness that rule over the vegetative functions of the body and also regulate mood). The norms for the balance of the functional divisions of the brain necessary for sexual activity are probably narrower than for other types of responses. In the young and healthy person, the brain is able to compensate for much disturbance of the balance of the divisions of the autonomic nervous system brought on by alcohol, marijuana, or more powerful drugs. Thus, in the young, the sexual functions may not show many signs of disturbance. With age, the autonomic nerve centers lose their capacity to adjust, and the sexual response mechanisms are much more likely to be severely affected.

Effects of Marijuana on Other Mental Functions. *There are, however, many marijuana users in factories and offices who appear to be normal but who suffer chronically from an altered judgment that may affect the quality of their work.*

We have all seen examples of the tragic effects of marijuana on the mind. Marijuana smokers seem to suffer from distorted emotional responses, disordered thinking, dullness, and slothfulness. Early in the use of the drug, these behavioral changes appear to be reversible, but as exposure continues, recovery is less and less complete.

Those most severely affected are usually not employed. There are, however, many marijuana users in factories and offices who appear to be normal but who suffer chronically from an altered judgment that may affect the quality of their work.

The most extensive study of the lingering effect of the hemp drugs was conducted at the request of the Egyptian government by Professor Soueif. Over a period of 25 years,

he observed 850 cases of hemp-drug users, which he matched against control cases. Both the users and the controls were given standardized tests of mental function. The tests showed that "those with a higher level of education and/or intelligence — show the largest amount of deterioration from marijuana use." It appears that the cumulative detrimental changes induced by marijuana result in impaired judgment and a diminished capacity to take responsibility.

Marijuana has an adverse effect on the performance of high-level jobs. The user is frequently lethargic, lacks motivation, is prone to error, has trouble remembering important details, and cannot think practically about the future. These transformations are gradual and are not marked by the obvious signs of impaired ability; it is easy to spot the alcoholic, but not so easy to spot the marijuana user.

The dullness of the marijuana user appears long before he can actually be called amotivated. Although there have been no proper quantitative studies of the degree to which marijuana use induces carelessness, lack of attention, or failure to achieve the highest job performance level, the cost of marijuana use to the individual and to society appears to be high. In industry there appears to be as much reason to limit the job responsibilities of the marijuana user as to limit those of the alcoholic.

Studies of the influence of marijuana on drivers have shown that marijuana impairs judgment and reduces the driver's ability to gauge distance, speed, and road conditions. The severely altered behavior typical of the chronic marijuana user suggests that driving performance would be impaired even between uses: the user is never free from the burden of the active material.

There are other reasons for believing that the judgment of marijuana smokers is impaired. Marijuana users often accept the use of LSD, heroin, or cocaine, while the non-users reject these more powerful drugs. The adverse effects of marijuana ranks next to the adverse effects of opiates as the reason given for admission to federally financed treatment centers. Marijuana use interferes with practical success and produces alienation, sometimes mild, but sometimes severe enough to be called paranoia.

Recognizing the marijuana user in the early stages of use presents a problem. The appearance of the residues of the cannabinoids in urine can be used to indicate use within the past 24 hours. The level of THC in the blood, fat, or feces can be used as an indication of the average level of intake over a period of many months. Chemical testing for these residues is now possible but expensive; rapid, inexpensive methods will probably be developed. A legal issue will then arise: Does a firm have the right to require that employees take a test for marijuana use?

A Case History. Until recently most of the requests I received for advice about marijuana were from people in their teens and early twenties. Now I am receiving more and more requests for help from older people.

Recently an executive who read my article in *Private Practice* telephoned me. "Your article described me," he said. "It enabled me to comprehend how desperately I need help." He had started to use marijuana a few years ago, he told me, at the invitation of a just-out-of-college salesman he had hired. He found smoking marijuana a great way to unwind and began to smoke more and more frequently. "I now roll and smoke a joint six or seven times a day," he said. "To have enough appetite to eat, I usually have to start smoking before breakfast. If I haven't stoked up since the previous evening, I get so paranoid by morning that I can't bear my awful thoughts. I got my wife started on marijuana, and now she is even worse off than I am. She has begun to have headaches continuously. We've tried to quit now for several months, but we can't; we need help. What shall we do?"

Bit by bit, under my questioning, he revealed that his income, which had been quite high, had fallen to a minimum. He had changed from a robust, healthy, enthusiastic, sexually active man, in love with his wife and devoted to his family, to a man emotionally empty and sexually and physically inactive. He and his wife, he felt, had stayed together only because there was no better alternative for either of them. He has begun, he said, to lose weight — his buttocks are now too thin to sit on a hard chair; his face is thin and sallow; his fingers tremble; and his memory plays tricks on him. His wife's headaches have become worse and worse. (From interviews with drug users, I have found that women get headaches after prolonged exposure to marijuana, whereas men get headaches during withdrawal.) Both he and his wife desperately want to return to the life they had before they started smoking marijuana.

They are already on the way back, for they sincerely want to stop using marijuana. But to be able to abstain completely, they will undoubtedly need professional help. Their recovery should be striking after 6 months of abstinence; their full recovery will probably take several years.

Recent research indicated that marijuana is far from harmless, and . . . chronic use can produce adverse psychological and physiological effects. Therefore, its use should be strongly discouraged as a matter of national policy.

The belief that marijuana is safe has become so entrenched that the steadily mounting proofs of its dangers are ignored. The political movement to "decriminalize" (legalize) marijuana has distracted attention from the health

hazards. There are those in government, education, and science who have chosen to cope with the marijuana problem by making light of it or by condoning the use of the drug. For example, the following statement was treated merely as a footnote in the 1976 Annual Report to the President by the Domestic Council Drug Abuse Task Force. "Recent research indicated that marijuana is far from harmless, and . . . chronic use can produce adverse psychological and physiological effects. Therefore, its use should be strongly discouraged as a matter of national policy." When such statements as this are buried in footnotes, it is easy to see why people become confused.

This situation must change, for, in my experience, people are eager to know the facts. When I explain the effects of marijuana to audiences, someone always asks, "Why haven't we been told this before?"

I believe that if people know the evidence indicating the real dangers of marijuana, they will be discouraged from using it. In my teaching of drug abuse courses at the University of California, and in my counseling around the world, I have found that by explaining how the brain functions and how marijuana affects this functioning, I was able to help people stop using the drug and to keep others from experimenting. The study of the brain is fascinating. The brain is the master control for both mind and body. It governs sensations, moods, thoughts, and actions, not by a magical process, but by a complex series of chemically regulated controls that are easily upset by sensual drugs. People become interested in knowing about the programming of sexual development in the brain; how the brain's control of sexual functioning and sexual dreaming can be disturbed by drugs; how drugs can cause the brain to make colors appear brighter, sounds clearer, and odors more intense; how drugs distort images and the sense of time. They learn the causes of drug-induced hallucinations, flashbacks, memory loss, pleasure and pain, changes in mood. They are usually surprised to learn that these effects occur in the brain and that, although fascinating, they are indications of disturbed brain function.

All that we are is in the interactions of our brain cells.

Our thoughts and perceptions as normal persons cannot be improved by drugs. All that we are is in the interactions of our brain cells. With this understanding of how our brains work, the false notion that the mind is expanded by drugs can be replaced by a more profound appreciation of the complexity of our being. When orders induced by drugs are interferences rather than additions to perception, they will be in a better position to reject the use of mind-altering drugs. ◀

An excellent source for the layman on the effects of marijuana use is: *Sensual Drugs: Deprivation and Rehabilitation of the Mind*, by Dr. and Mrs. Hardin B. Jones.

Know-how is not enough

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THE F-4 pilot was returning to Homeplate after a cross-country flight. He flew a normal GCA until he picked up the field and the landing mirror visually, and flew an on-speed approach, with a centered ball, until in-close. He intentionally let the ball go low, to shorten the aircraft touchdown point and allow maximum rollout on the 8000-foot runway.

The aircraft touched down 6 feet right of centerline, a little less than 200 feet beyond the approach end. Squadron plane captains saw the landing and said that, immediately after touchdown, smoke billowed from underneath the starboard side of the *Phantom*. A playmate, who had landed just ahead of the pilot, also saw the smoke from a point about 6000 feet down the runway.

The pilot and RIO felt the aircraft yaw to the right after touchdown, and the RIO told the pilot that smoke was pouring out from under the starboard wing. The RIO said he thought the right main landing gear tire had blown. The pilot engaged nosewheel steering and hit the left rudder to maintain control. He did not deploy the drag chute. He wanted to drop the tailhook but didn't because he felt he couldn't afford to swap hands on the stick. He felt he could not free his right hand to actuate the hook handle without releasing the nosewheel steering button.

The *Phantom* continued down the runway with a right yaw of about 35 degrees. (Later, tire marks on the runway indicated that the tire had blown and was breaking up.) The pilot judged the yaw to be too severe to wave off. About 3000 feet from the E-28 arresting gear, the F-4 began a yaw slowly back to the left and the aircraft was

pointed straight down the runway. (Tire marks showed the yaw was minimal within 150 feet of the arresting wire.) Immediately after crossing the wire, with 6500 feet remaining, the left tire blew and the *Phantom* began a left yaw. Airspeed then was 100 knots.

The aircraft continued yawing and drifting left. The pilot tried hard right brake but was unsuccessful in checking either the left yaw or drift. The F-4 departed the runway, with 5100 feet remaining, at about 60 knots. It came to rest 50 feet from the runway edge in soft turf, about 110 degrees from the runway heading. The pilot secured both engines before leaving the runway and, after they stopped, both crewmen climbed out. Emergency vehicles were on hand, but not needed.

The *Phantom* had made three landings during the cross-country flight (including one the same day) prior to the incident. Tire treads were well within limits, both brake assemblies were removed and found OK, and the brake system was tested and found normal. The pilot had previously blown tires during field landings. He had accidentally applied right brake on several occasions, resulting in tire skidding during rollout. The pilot said he had solved this by removing his feet from the rudder pedals and putting them flat on the deck during landings. He had made this landing in such a manner.

No foreign object on the runway was found that may have punctured the tire, but it is evident that the right tire failed on landing. The left tire blew immediately after crossing the arresting wire. Heavy tire marks indicate braking commenced 300 feet prior to the wire.

The pilot's judgment and actions were questionable. After the right tire failure, the pilot followed NATOPS procedures by engaging NWS and cranking in left rudder. However, what the pilot perceived to be excess yaw, 300 feet before the wire, was actually well within limits for a safe go-around. His failure to lower the hook was questioned. Not many pilots consider an exchange of hands on the stick, while keeping the NWS button depressed, to be a significant problem during rollout with a blown tire.

The incident started with a blown tire on landing, which the CO pointed out as a common occurrence in naval aviation. The pilot's failure to control the emergency caused the incident. A decision to take it around is a judgment call, and the pilot was not berated for staying on the deck. However, he was taken to task for not lowering the hook and attempting either a shortfield arrestment or the midfield E-28.

Naval aviators are expected to perform exacting tasks. Each must know *what* to do in an emergency, know *exactly how* to do it, and then *execute flawlessly* — or the consequences can be dramatic! ◀

AN incident occurred during vectors for a localizer approach to the duty runway, with a side step to a parallel runway to the left. The weather was sky obscured, 800 overcast, visibility 2½ in light rain, winds of 10 knots. We were headed downwind at 7000 and were turned on a right base and told to descend to 4000. In the turn to base leg, passing through 6000, the controller advised we were 3 miles from the fix and wanted to know if we could get down to 4000 if we were turned on final now. I told my copilot to tell him yes.

We were given a 60-degree right turn, cleared to 2800 feet, and told to call the tower at the fix. Some time during the whifferdills and didoes which followed, my copilot heard a new ATIS report announcing visibility had decreased to 1½ miles in light snow and fog. To get down, I dropped my gear and 25 degrees of flap. We continued our turn and descent at a good rate . . . too good. I went right through 2800 descending. I caught it at 2100 and started climbing back to 2800 when the controller called and told us to get back up to 2800. We reached 2800 feet and crossed the fix at the same time.

I was mentally kicking myself for not scanning better, and mad at myself for not being more aware of my rate of descent. While we were busy reducing power, leaving the fix inbound, my copilot reminded me that visibility was too low for a sidestep. He was right.

My performance was very sloppy to say the least. I had been behind the aircraft since I accepted the early turn to final. At least three times, things occurred that called for a missed approach. *What am I doing here?*

About that time we reached MDA and acquired a nice, bright set of approach lights. I held my altitude until we saw the runway. Visibility wasn't too bad on the approach, but it was worse when we passed the field boundary. When I saw the runway, I had to drop full flaps and honk off a batch of power — it was almost too late to land. We touched down hard and long, after "overflying" 2000 feet of the runway. We stopped all right, but (expletive deleted) 'taint no way to run a railroad, an airline, or an aircraft.

For many days I've been kicking myself and asking "why?" I'm sure my copilot, a good stick, was shaking his head all the way down. I dug my own hole, for sure, and was nearly buried in it. I turned early to cooperate and almost cooperated right into the farm. I should have said "no" and gone around, but I didn't. Once I accepted the turn, I felt obligated. Pride? It was an illegal and unprofessional procedure, and I was too far behind the bird to ever catch up. The only good thing I did was to hold MDA until I saw the runway. The rest I'd like to forget, but I can't.

Adapted from *Air Safety Review*

I CAN MAKE IT!



What's it all about?

SAFETY to many is either happenstance or a pure matter of convenience. To others, it is a vital and necessary part of the management process. Management at all levels tend to support their functions in direct proportion to that which each contributes to the success of the basic mission. Any enterprise, therefore, must continually evaluate its individual managers for their ability to make planned decisions which minimize the potential for loss. There is no witchcraft or black magic associated with a unit which enjoys a superior safety record, only a complete understanding and adherence to the concept that safety is a total and inescapable function of management. Should there be any doubt concerning the validity of this statement, the letters below should offer ample reinforcement.

Commander T. W. Wright, USN
Commanding Officer
Fighter Squadron FOURTEEN
FPO, New York 09501

Dear Tim,

I would like to take this opportunity to congratulate the officers and men of Fighter Squadron FOURTEEN on achieving 1 year of accident-free flying.

The accumulation of over 4000 flight-hours during this period without a major accident is an endorsement of the attention to safety throughout FITRON FOURTEEN. I would be interested in knowing if you have incorporated any innovations or personal policies in your safety program which you feel have contributed to this accomplishment. I wish you continued success and good luck. Keep smiling.

Sincerely,

G. E. R. Kinnear II
Vice Admiral, U. S. Navy
Commander Naval Air Force
U. S. Atlantic Fleet

Vice Admiral G. E. R. Kinnear II
Commander, Naval Air Force, U.S. Atlantic Fleet
Naval Air Station Norfolk
Norfolk, Virginia 23511

Dear Admiral Kinnear,

Thank you for your note of congratulations on the achievement of 1 year accident-free flying. I have passed your thoughts on to the rest of the "Tophatters" and they are most appreciative.

As for innovations and programs leading to this achievement, I don't really think we have any new ideas. However, I will outline the philosophies which I think may have helped:

- **Safety through Readiness.** I know that is the reverse of the usual naval aviation motto, but I personally believe it is a better statement of what we are trying to achieve. Our goal is combat readiness — that is our job. If we are, in fact, striving to achieve combat readiness, then safety is a natural byproduct. You obviously reduce combat readiness if you damage or destroy your assets — people and equipment.

- **Strength and command emphasis throughout the Quality Assurance program.** And this means more than just the few men in the QA Division. It includes, of course, the CDI programs and *all* levels of supervision. I personally interview each QAR and CDI when I sign their qualification forms. I want them to understand, beyond any doubt, what their responsibility and authority is. When you are trying to make a 25-30 sortie day at sea with 10 *Tomcats*, the maintenance folks have to hustle. When the pressure is on, from me through the maintenance officer and the maintenance chief to "make the schedule," it is important

that the supervisor/QAR/CDI *understand from me personally* that if he says the airplane is not or will not be ready for the 1800 launch then that is the way it will stand.

● **Special attention during changes in tempo (either up or down) and environment.** We try to ensure that everyone is briefed on why the changes are occurring and what special pitfalls are waiting. We beef up supervision in all areas — to the point of overkill.

The change in tempo is especially insidious when the tempo is reduced. If anyone is ever going to get complacent that is when it will happen.

● **Aircrew Professionalism.** All aircrews must understand that only professional performance will be accepted — from brief to debrief. The requirement at the command level is to provide the motivation and the quality, realistic training necessary to do the job. When you provide today's JOs an FSC *Tomcat* and a few F-15 *Eagle-Jets* in a good, hard ACM environment, they are happy as a bunch of clams — they don't need to flathat and fly upside-down over the beach to get their kicks. It has been my experience that they much prefer professionalism when the training is real and meaningful against the threat which they know exists. By the way, Admiral, the crop of JOs

we're getting now is super. I hear a lot of folks saying that isn't true, but I don't see it that way.

As I said at the outset, there aren't any new ideas — no gimmicks. I have been blessed with a group of superb people and I've tried to follow the general outlines I've discussed above. We still make occasional mistakes — but we're trying harder.

Thank you again for your interest.

Very respectfully,

T. W. Wright
Commander, U. S. Navy
Commanding Officer
Fighter Squadron FOURTEEN

Too often, significant effort is expended within a command looking for a new gimmick to bolster a safety program. As indicated in CDR Wright's letter, truly successful safety programs are usually a function of tough, competent management based on policies and procedures already available. New ideas do come around and we should continue to be alert for them. But, in the meantime, successful application of "old ideas" can bring very fruitful results.

Flight Instruction - When to draw the line

By LT J. J. Miller
VP-40 NATOPS Officer

OPERATIONAL squadron flight instructors are tasked with a peculiar job, that of taking an operationally ready aircraft and transforming it into a training aid. To accomplish this, the instructor must have a complete knowledge of aircraft systems and NATOPS, and possess a thorough understanding of the student's strengths, weaknesses, and needs. He must combine these prerequisites to create a valuable training evolution. To do this he has to draw a fine line between simulated and actual flight conditions. Simulating the loss of warning devices, navigational aids, and aircraft systems, while their full operation is obvious to the student, is a far cry from an actual malfunction. Flight simulators are a valuable tool. Yet, as realistic as they can be, there is no viable substitute for flying the aircraft. In a simulator, particularly in the ditching and landing environments, the student's knowledge that an unprofessional action will not truly jeopardize his life, or the lives of his crew, is a fact that cannot be eliminated from the student's mind. To ignore this basic fact is to invite tragedy. In the aircraft, with guidance from the RAG, NAVEDTRA, and an active IUT program, a combination of simulated and actual can achieve an effective training environment. Through his own initiative and theatrics, the instructor can further develop the situation to approach "real world." Caution arises when this simulated situation borders on becoming an actual problem. A distraction to either the student or the instructor can force it beyond this point. How close the instructor allows the situation to come to this is purely a judgment call on his part. He must weigh his own experience, the student's ability, and his IUT training when making this decision. The instructor pilot is, in all respects, the Patrol Plane Commander for the flight. As such, he must ensure that no practice maneuver or simulated emergency is carried to the extent that safe flight is jeopardized. When training is being accomplished at the expense of safety, it is time to "draw the line." ◀

ACCLIMATIZE WINTERIZE

28

A PILOT was flying over the Atlantic Ocean this time of year when his wingman announced, "Gus, you're on fire!" Gus checked all his gages, looked out over the wings and as far aft as he could, but saw nothing. He racked the bird around in a tight turn and headed for the coast. He was at 12,000 feet and lowered the nose to pick up extra knots. He crossed the beach at 10,000 feet and headed inland. There was no airport nearby and he advised his wingman he was going to bail out as soon as he could.

The pilot trimmed his burning aircraft nose down, pointed it toward the ocean, and jumped out 6 miles inland at 8000 feet. Winds that day were out of the northwest between 35-50 knots. He drifted in his chute all the way back to the ocean and landed in the water, about one-half mile offshore. The surface temperature was -5°C , the pilot had on only summer gear, and died of exposure — even though he was picked up within 30 minutes of water entry.

Now, obviously, any pilot who would ignore all the directives concerning the wearing of proper winter flight gear was allowing himself only 1 in 10 chances of surviving an ejection or bailout into the cold water. He gambled with his life and lost. Winter weather requires anyone who flies to dress himself properly. It's every bit as important as ensuring the aircraft is ready to go.

Winter weather is coming, and it's time to prepare for the icy blasts. It's not enough just to make physical preparations; it's also prudent to make mental preparations. Individuals need to recognize they will not be able to work as fast, walk as fast, or do anything as easily as they could a couple of months ago.

For example, an ordnance crew was downloading an A-7 after an abort. A bomb was dropped, landing on the left foot of one of the crew, breaking two toes. One of the crew was unable to maintain his grip because of numb fingers. The other members of the crew were unable to control the bomb. The material of their gloves didn't provide enough friction to maintain a proper grip.

The key to successful winter operations is planning. Your planning might include such elements as:

- Study NATOPS and the MIMs to have a complete understanding of cold weather effects on your bird and its systems.
- Review time requirements it takes to do your chores. (Allow much more time for outside work.)
- Inspect your survival gear.
- Conduct thorough preflights.
- Listen carefully to the meteorologist.
- Pay attention to your friendly flight surgeon's discourses about sniffles, physiology, exposure, wind chill, frostbite, snow blindness, etc.

Consider an example concerning a C-118 crew. They were late for a night takeoff. The weather was up and down, varying between impossible and lousy. The runway and taxiways were covered with ice, light snow was falling, and there was blowing snow. Their clearance was issued and they began a takeoff. However, someone (never determined) set the prop controls for only 2400 rpm. Halfway down the runway, they aborted and were able to stop. All four engines had to be removed, because of overboost. There's no doubt this was a pilot *delta sierra*, but you can bet that the adverse weather conditions played a part.

We'll assume you have read, learned, and inwardly digested all the good stuff in the NATOPS manual about cold weather operations. The next plus for you is to dress the part. It's the layers that count. You may be a tad uncomfortable by the time you've put on everything necessary but, if you're dressed to walk home, you have dressed correctly.

OPNAVINST 3710.7J addresses in detail criteria regarding wearing of antiexposure suits. NAVAIR 13-1-6.7, Aircrew Personal Protective Equipment manual (referenced by OPNAVINST 3710.7J), contains aircrew personnel configurations, by type aircraft, depicting authorized protective and survival equipment and clothing for flights under various climatic and operational conditions. Provisioning of antiexposure and winter flight clothing is in accordance with NAVAIR 00-35QH-2, Section H, NAVAIR Allowance List — Flight Operational Material for aircraft squadrons.

A major command directed all units to take stock of cold weather gear for line/maintenance/flight personnel. Cold temperatures have the insidious effect of encouraging



maintenance shortcuts, cursory preflights, and less-than-desirable aircraft handling. Properly outfitting all hands who work outside will help prevent the above risks.

Another plus is a careful walkaround. You have to see, poke, and inspect areas (control surfaces, gear, vents, etc.) that haven't been looked at so closely since this time last year. Flight controls must be free of frost, ice, and snow. Remember, it's a whole lot better to be 30 minutes late because of a last minute defrost job than to try to go with the frost untouched.

You can chalk up a real "biggie" when you're ready to operate (start, taxi, takeoff) by remembering to follow SOP to the letter. Among other things, remember to check the surface under the gear before start, to make sure there's no ice; otherwise, get ready to request a tow to an area that's reasonably clear. Be careful to taxi down the middle of any taxiway to keep outboard props or main rotor blades clear of the snowbanks. Ensure there's bare concrete or packed snow beneath you on runup to avoid going IFR on the ground. Naturally, after takeoff in slush or wet snow, follow the good prudential rule to cycle the gear an extra time to avoid the gear freezing up.

A P-3 crew took off in subfreezing temperatures and, when the gear was raised, the nose gear indicated unsafe. The nose gear doors were visually checked closed. The pilot didn't leave the pattern, requested a landing and, on the downwind leg, dropped the gear. They all indicated down and locked. After rollout, an inspection revealed a 2-inch ice buildup on the nosewheel uplock. The ice had come from light snow and slush during the takeoff roll.

Just like any pro, as you add power for takeoff, do so

slowly to ensure that directional control is no problem. Prepare for longer takeoff distances whenever snow and slush are on the runway. Additionally, when there's icing in clouds around the airport, plan to make a max climb through the clouds to on top (ATC permitting). When heading for Homeplate, or your destination airport on a cross-country, do not hurry to perform an en route descent in icing conditions when you can stay above it a little longer.

Be mentally prepared, when you break out on approach, to recognize the airport. It may not look like much when all you can see is a "squiggly" line in a field of white, but you know it's really that 8000-foot runway masked by snow. It's important to fly the approach on speed, and touch down on the money. Unless your NATOPS prohibits it, plan to slow down initially by using aerodynamic braking. Even though braking action is reported as poor, you can slow down straight, even though you'll use a lot more runway than usual. Plan to catch the abort gear if those binders don't do the job.

In summary, one cannot state too strongly the importance of advance planning and remaining ahead of the aircraft at all times. You can:

- Expect to take more time for your mission brief, weather brief, cockpit brief, preflight, start, taxi, and takeoff.
- Expect weather conditions to be rapidly changing and worse than forecast.
- Recognize that your bird and its systems need extra time to warm up before operating normally, and ensure that all anti-ice and deice systems are checked and normally operating before takeoff.
- Keep a close watch for ice accumulation while in flight. Know where the first accumulations will usually form, so that you can exercise the proper system to clear it off.
- Avoid known icing conditions like the plague. Remember, rime ice is rough, milky, and formed by instantaneous freezing of droplets as they strike the aircraft. You usually pick up this kind in low- and mid-level stratiform clouds. Clear ice is glassy, translucent, and formed by slow-freezing droplets. You're more apt to pick up clear ice in cumulus clouds.
- Consider, when penetrating fronts and encountering icing, asking for a change in altitude — depending on the type of front being penetrated.
- Exercise caution on approaches and landings with a load of ice. Make easy turns and increase airspeeds. Ice is a drag!

It is time for all squadrons to begin serious planning for winter operations. Don't wait for the first days of winter to teach you your lessons the hard way. ◀



Letters

Blood Priority

FPO, San Francisco — I have read *APPROACH* magazine for 15 years and have vicariously gained much experience and safety moxie from your many fine articles. I am a helicopter pilot by trade but have read and oftentimes understood the fixed-wing-only type article. Often, there were important parallels that could be drawn from these articles. Nonetheless, be you of the fixed-wing or rotary-wing persuasion, there is at least one universal phrase that all aviators have come to recognize and that is **BLOOD PRIORITY**. I offer the following example.

We as aviators often discover design deficiencies on our aircraft. Often, these deficiencies are remedied by airframe changes. An airframe change in its embryonic form is called an Engineering Change Proposal (ECP) which is presented to the Navy by the manufacturer in order to offer state-of-the-art modifications to the aircraft already in service. The Navy then must decide which if any of the ECPs will become airframe changes. As managers, we all work under constraints, and the "Air Navy" is certainly constrained monetarily. ECPs for a particular aircraft that are rejected by the Navy and later are found to be contributing factors in an aircraft accident become **BLOOD PRIORITIES**. Every community has one or more. Let me introduce a **BLOOD PRIORITY** found within the H-53 community.

The difference between the H-53A and the H-53D is that in the Delta model the engines, under certain conditions of high-density altitude and gross weights, can provide more torque to the main rotor head than the tail rotor can compensate for. This is often encountered while hovering and attempting to lift a heavy

external load. The manufacturer recognized this immediately and offered, in way of a fix, an ECP that would change one bellcrank in the flight control system so that 28 degrees of pitch could be realized on the tail rotor blades instead of the current and inadequate 24 degrees. The cost would be \$55 per aircraft; the bellcrank could be installed easily at the organizational level in much less than 1 man-hour. The ECP was rejected. This deficiency has caused more than one accident and an unaccountable number of near-misses in the way of spinning H-53s while hovering over heavy loads in populated LZs. The article in the MAY '79 *APPROACH* entitled "Deadly External Lift" tells of the most recent accident involving this problem (claiming in excess of 20 lives). The accident board named the bellcrank as a "contributing cause" and soon thereafter the well-worn ECP became an airframe change. That was 2 years ago, and to date my squadron has not received the ordered modifications. The ordered documents remain valid at this writing. Only one aircraft from this command has had the "fix" installed. Any single drop of blood is surely worth more than the \$55 per aircraft.

LtCol William S. Ainsley III, USMC
CO, HMH-463

● COMNAVAIRSYSCOM 292228Z NOV '78 stated, "A production contract for AFC 244 kits was let, and kit delivery commenced in SEP '78. Delivery of kits including spares is estimated to be completed by the end of DEC '78."

The first delivery of the bellcrank modification kits to MCAS Cherry Point was in JAN '79. The first delivery to NAS North Island was in MAY '79. As of the end of JUL '79, HMH-463 had received only three of the kits, with 10 more en route.

More on Flying Clubs

After reading the article, "Is NATOPS Needed for Navy/Marine Corps Flying Clubs?" (MAR '79 *APPROACH*), I called the Naval Safety Center, but can't remember to whom I spoke. I would like to toss in my two cents worth to reinforce the "Hell, no!" of the COMFAIRWESTPAC staff member whose letter appeared on your August letters pages.

I am a retired Marine Corps aviator who, 8 years after retirement, surprisingly found myself working for a U.S. Air Force Major Command as the Command Sports and Recreation Supervisor! This included supervision of five Air Force aero clubs, spread from coast to coast. It was a distinct shock to my smug confidence to learn my background as a naval aviator did not automatically qualify me to supervise or inspect aero clubs. They are not fighter squadrons, and the dedicated and sincere general aviation pilots in them do not think like military pilots. Once I backed off and regrouped, I realized my aviation background was a great help in the supervision of these recreation activities. Since then, I have taken it upon myself to most emphatically "educate" Air Force pilots who were members of an inspection team headed for an aero club that things would be different. Admittedly, a 2nd Lt/Ensign with 300 hours is still a nugget. On the other hand, an aero clubmember with 300 hours in a Cessna 172 is experienced.

NATOPS type supervision is not needed, but supervision is needed. In 1978, the accident rate in general aviation was 12.6 per 100,000 flying hours. In USAF aero clubs, it was 6.7. This was not all luck. At the Air Force Manpower and Personnel Center in San Antonio, Texas, the Air Force

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has a commissioned officer and a non-commissioned officer supervising the Air Force aero clubs (Autovon 487-3471). Each MAJCOM has a supervisor (with other duties, too); at the base level, the clubs are a part of the Morale, Welfare, and Recreation Division (formerly Special Services). Air Force Regulation 215-1, Volume II, provides sufficient guidance for the operation of aero clubs. The draft of AFR 215-12 is being processed, and will replace AFR 215-1, Volume II. Aero clubs are a recreation activity, and should not be under the supervision of Air Ops any more than base transportation supervises the riding club, or base ordnance assumes responsibility for the skeet club.

I hope APPROACH will continue to run articles concerning Navy/Marine Corps Flying Club safety, or lack thereof, because all pilots should be concerned about all facets of aviation safety.

Maj James C. Harrington, USMC (Ret.)

Re: "Flight Deck Hazards"

Alameda, CA — I must take exception to a statement in "Flight Deck Hazards" (MAR '79 APPROACH). The article says, "Don't assume the recovery is complete until the boss says so on the SMC. Then you have to watch out for the helos." This exemplifies what I have observed to be an erroneous and all-too-common attitude towards helos — namely, that they are different from "real" aircraft. THE RECOVERY IS NOT COMPLETE UNTIL THE HELO HAS LANDED AND THE ROTORS HAVE STOPPED. If the boss feels compelled to say something after the last fixed wing, the most he should say is "Fixed-wing recovery complete, stand by to recover the helo(s)."

There isn't a helicopter pilot who has ever operated off a CV/CVA that hasn't chased an LSO up the deck or been expected to operate off the angle while joggers slowly circled around the bow. The fact is, if there was a helicopter accident on the flight deck, the safest place to be would be inside the helo. The potential energy stored in the 10 rotating surfaces on an H-3, for instance, is too much for the average man on the flight deck to comprehend, but, if released, it could be even more devastating to personnel than a fixed-wing ramp strike. Virtually everybody on the flight deck and in vulture's row would be in peril. There would likely be little warning, and no place to hide. The

Credit Where Credit Is Due!

"Sinking Spells," JUL '79 APPROACH, was incorrectly credited. The original article was authored by Mr. Dan Manningham and was adapted from JUN '76 *Business and Commercial Aviation Magazine*, Copyright © 1976 Ziff-Davis Publishing Company. All rights reserved.

Mr. Manningham, now a *United Airlines* captain, was a naval aviator from 1958-63 and last served with HS-5.

speed at the rotor tips is near transonic. Shrapnel would travel outward in all directions, covering the entire deck and filling the air; it would be impossible to dodge or run away from. Those on the deck that escaped injury would do so only through pure luck.

No, the recovery is most certainly not complete just because the last fixed wing is onboard. Once those magic words, "Recovery complete," come over the SMC, cranials, goggles, and shirts immediately begin to come off and the joggers and sightseers begin to appear, while the ATO and his passengers huddle near the island and shade their eyes from the rotor wash. I have been aboard several CV/CVAs on both coasts and, although the details may change, the principle remains the same — people just don't take helicopter operations seriously enough. Perhaps this stems from the fact that helicopter operations are statistically safer than fixed wing's, but, as LT Kunkle states in the article, "The one you don't see is the one that will get you." I would modify that slightly to say, "The one you don't see or take seriously enough is the one that will get you."

LCDR Francis R. Stubbe

● We couldn't agree more. The recovery isn't complete until *all* aircraft are safely onboard. Incidentally, we've had other letters on this subject in the JUN and OCT '79 issues.

Re: AUG '79 Air Breaks

NAS Lemoore — After reading the article "Damn the Chocks — Full Speed Ahead!", I was confused about the type vehicle that was actually involved in the crunch. NC-8s don't have a clutch, just a simple three-position switch for gear selection. Could this have been an NC-5?

AO1 J. A. Hermsdorf
VA-147 QA Dept.

● The vehicle in this incident was an NC-8. Unfortunately, the author of this piece had an NC-5 in mind when he mentioned the clutch.

Re: "Ditching of Flight 586"

CGAS Barbers Point — Your article on the P-3 ditching in the AUG '79 edition was well written. Certainly, the major factor that saved the ten crewmembers was the flying skill of the aircraft commander, assisted by his trained crew.

The item you mentioned about not having survival radios must be addressed. I was the pilot in the Coast Guard C-130 on scene that night, and we were frustrated by not being able to communicate with the rafts. We tried dropping a radio to the survivors, but it was dark when we arrived on scene and they apparently did not see or could not recover the can. We were in communication with the Russian fishing vessel shortly after arriving. If only we could have conveyed this to the rafts, maybe the will to live might have been stronger, knowing that help was just hours away. It is important that all your rafts, and better yet, all your personnel, be issued survival radios.

Another point not brought out in your article, but discussed during our debrief, was having a VHF-FM radio onboard the P-3s. That radio is required by foreign fishing vessels, and that is the radio with which we made contact with the Russians. If nothing more, a portable FM unit would be sufficient in an emergency.

It was a pleasure meeting the survivors some 6 months later, as that was a night neither myself nor my crew could ever forget.

LT Bill Porter, USCG

● Every effort is being made to obtain PRC-90 survival radios for all P-3 aircrewmembers. Hopefully, further studies on survivor communications will bring about more improvements in this area.

FLYING A DESK

By LT Chris Panos
NROTC Unit
University of Rochester



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REFLECTING back on flight training and squadron tours that went all too fast is the favorite pastime of many NROTC instructors. Our links to that exciting time are magazines like *APPROACH* and *NavAir News*. It does not take too long before you begin to feel like you're losing touch with your buddies, as well as aviation in general.


So what does a guy who has been flying a desk for 2 years have to say about safety? Did he drop a typewriter on his foot? Unfortunately, it is a little more serious than that. Having the good fortune of flying with a consecutive "E" squadron with a 14-year accident-free record did not expose this Naval Flight Officer to the somber side of naval aviation — CACO duty.

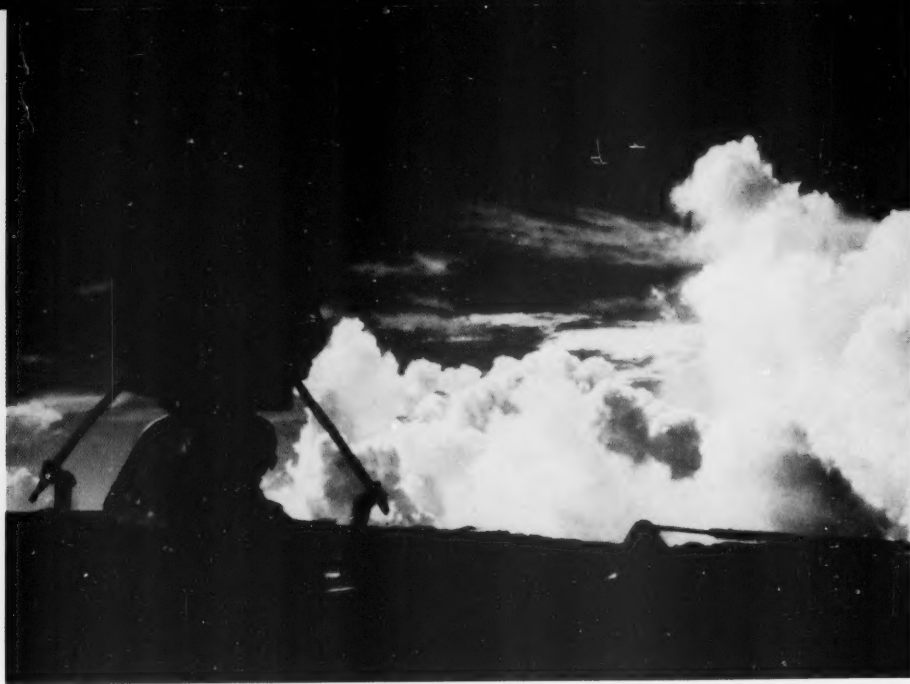
I had been at my new duty station less than 4 months when my CO called me one Sunday evening. His normal jovial tone had been replaced by one much more subdued, as he said, "Chris, I've got something for you to do." He gave the basic details of what had happened. I could not believe what I was hearing. It was even my type of aircraft! The exact mission I had flown hundreds of times!

My wife had just turned on the news, and, sure enough, there it was. Thoughts raced through my mind. If his parents saw the news, would they guess that their son had been in the aircraft? I hoped not. I felt torn inside. This was the last type of duty I wanted to be assigned, yet I would not have wanted anyone else on the staff to do it.

As I hastened into my Service Dress Blues, I thought about how to break the news and how I could ease the pain. All I could offer was my sympathy; I knew that the grief would be intense and unbearable. I cried for the family, knowing that it would be better to get my tears out of the way before I arrived.

After a 20-minute ride on a snow-filled night, I was at the door. I rang the bell. As the door opened, the father saw a naval officer in front of him on a subzero night. His face showed that he expected the worst. You can imagine my emotions when talking to the parents — especially when the mother recognized my wings and saw that I, too, was in aviation. When I left that evening, I prayed for the family and hoped never to see this side of aviation again.

I have done this duty twice since that first time. Each time the thought has persisted — if only the guys in squadrons would think of this, it would have to improve safety. Without trying to sound maudlin, I urge you all to take the time to think about presenting an American flag to the wife of a friend at a gravesite. It will make you a safer aviator. 



Continual
awareness
is the price
of Safety.

Poster idea contributed by LT Bill Short, VP-4



A pilot put down with a cold,
Is a sad, sad, sight to behold.
But it's sadder yet,
To take up a jet,
And mark another farm "SOLD"!

